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CONTENTS



Corporate Express Goes Direct

In the Technology section: Corporate Express, a \$5.5 billion office products supplier, improved service and cut costs when VPs Bret McInnis (far left) and Wayne Aiello integrated its supply systems with those of its customers. **Page 17**



09.01.03

Business Rules Come First

In the Management section: Don't start an IT project without a clear set of written rules about the way your company conducts business, advises author Ronald G. Ross in this excerpt from his book *Principles of the Business Rule Approach*. **Page 30**

NEWS

5 Inadequate IT at NASA contributed to the Columbia disaster, according to the panel that investigated the crash.

5 RFID technology is a threat to personal privacy, say critics.

6 PeopleSoft ranews its anti-Oracle refund offer, but Oracle calls it a gimmick.

8 Automated patch management tools are attracting users seeking better protection from security threats.

8 Network Associates unveils network and security management tools for small and mid-size businesses.

9 A military unit expands its deployment of network management tools and robotic PCs to monitor the performance of a logistics system.

9 Dell releases network management software, and Dell PowerConnect switch users will get it for free.

10 The nation's first automated emergency alert network is deployed in Oregon.

10 Security vendor Sanctum upgrades tools for detecting security flaws in software during the development phase.

11 New international banking laws will require changes in banks' IT infrastructures.

11 McData aims to improve its storage switch technology through acquisitions.

TECHNOLOGY

20 Stretching Tape Technology. IT administrators may complain, but tape will be around for at least another 10 years. Here's why.

22 Future Watch: Genes II: Man and Machine Thinking as One. Future technologies will make it possible for humans and computers to "think together" in real time to preempt terrorist threats.



23 Security Manager's Journal: New Spam Policy: Return to Sender. Since Tuesday's strategy to automatically return suspected spam before it can hit users' in-boxes works perfectly — almost.

MANAGEMENT

27 Dealing With Rogue IT. Wildcat projects are going on without the knowledge or oversight of IT departments everywhere. Sometimes they make a lot of sense for the company, but sometimes they're disasters.

29 Global Toolbox. Managers are using various tools — such as procurement software and videoconferencing — for managing contract development being done overseas.

OPINIONS

6 On the Mark: Mark Hall gets an earful from Sun on Java handheld security, and he also learns about the cost of spam filters that eliminate important e-mail.

12 Maryfran Johnson thinks IT managers should seek partnerships with business units that have started their own rogue IT projects.

12 Pimm Fox surrenders to the spammers and virus creators who have ruined e-mail's value. But he's found a possible alternative.

13 Thornton May argues that world-class IT operations have a new view on what it means to be a true IT hero.

24 Paul A. Strassmann says it's hard to make a case for IT spending that's mostly for breaky infrastructure.

32 Paul Glan believes the work of archaeologists offers lessons for IT teams

40 Frankly Speaking: Frenk Heyes celebrates a rather bleak Labor Day for IT workers with some good news about how valuable your technology skills are to business performance.

DEPARTMENTS/RESOURCES	
At Deadline Briefs	4
News Briefs	6, 10
Letters	13
IT Careers	34
Company Index	38
How to Contact CW	38
Shark Tank	40

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SOURCE: COMPUTERWORLD.COM READER SURVEY, JULY 2003

J2EE vs .Net: The Choice Depends on Your Needs

DEVELOPMENT: The two platforms are remarkably similar, and incorporating a service-oriented architecture is a more important concern. © QuickLink 40744

A Look at Apple's Power Mac G5

MACHINTOSH: Computer consultant and Macintosh technician Michael de Agostis looks at Apple's evolving enterprise-centric efforts. © QuickLink 46685

How to Succeed at Supply Chain Collaboration

SOFTWARE: President's Jane Hoffer offers tips on implementing a vendor-managed inventory program. © QuickLink 40685

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- QuickLink 41430

AT DEADLINE

Suspect Arrested For Blaster Variant

The FBI arrested a Minnesota teenager who is suspected of developing a copycat variant of the W32.Blaster worm, which targets a security hole in Windows. Jeffrey Lee Larson, 18, of Hopkins, Minn., was being held on one count of intentionally causing or attempting to cause damage to a computer, officials said. Authorities allege that Larson created a so-called B-variant of Blaster and unleashed it via the Internet. (For more details, go to our Web site: QuickLink 40963.)

Boeing, IBM Sign Voice IT Contract

IBM said it has won a three-year contract worth an estimated \$160 million to manage The Boeing Co.'s worldwide voice communications network. As part of the deal, IBM and Verizon Communications will install a new voice management system for Chicago-based Boeing's U.S. operations. IBM is also offering various voice pricing on telephony systems and other technologies.

Lockheed Martin Wins FBI IT Deal

Lockheed Martin Corp. in Bethesda, Md., said it has been awarded a five-year, \$140 million contract to be the systems integrator on the FBI's Telecommunications Project. The project is part of a plan by the FBI to develop a new enterprise-wide IT security architecture that's aimed at better protecting key data assets.

Short Takes

SUN MICROSYSTEMS INC. AND SHEREL SYSTEMS INC. this week plan to announce a joint development deal aimed at optimizing the performance of Sun Solaris servers. ... **PEOPLESOFIT INC.** said it has bought the remaining shares of J.D. EDWARDS & CO. (See related story, page 6.)

Continued from page 1
Blackout

what caused the blackout.

A former Bush administration adviser who has consulted with the U.S. Department of Homeland Security on the power grid issue said the Blaster worm also hampered the ability of utilities in the New York region to restore power in a more timely manner because some of those companies were running Windows-based control systems with Port 135 open — the port through which the worm attacked systems.

Utilities that responded to requests for comment for this article said they weren't adversely affected.

Carol Murphy, vice president of government affairs at the New York Independent System Operator, acknowledged that Blaster affected the utility but said the problem was handled quickly, with no impact on power restoration operations. Joe Petts, a spokesman for Consolidated Edison Company of New York Inc., said there were "absolutely no computer-related problems of any sort that delayed our restoration effort."

The control systems referred to by Seifert, also known as supervisory control and data acquisition (SCADA) systems, are used to manage large industrial operations, such as the natural gas and electric power grids. They're often based on Windows 2000 or XP operating systems and rely on commercial data links, including the Internet and wireless systems, for exchanging information.

Scott Charney, chief security strategist at Microsoft Corp., said that Blaster raised a security and network performance issue for all Microsoft customers and that there was nothing unique about the electric power industry.

Joe Wiers, a control system expert and executive consultant at Cupertino, Calif.-based Kema Consulting Inc., said that in the Blaster case, the power grid fell victim to a

worm that attacked the communications infrastructure.

However, the control systems themselves are also at risk.

Current and former energy industry executives, as well as the former Bush administration security advisor, told Computerworld on condition of anonymity that the January outbreak of the Slammer worm affected the real-time control environment of "several" utility companies around the country.

One of those companies was Akron, Ohio-based FirstEnergy Corp. Although FirstEnergy has said publicly that Slammer didn't infect any of the control systems at its Davis-Besse nuclear power plant in Oak Harbor, Ohio, knowledgeable sources said the worm did cause disruptions. However, the plant was in "cold shutdown maintenance mode" and wasn't producing electricity at the time, the sources said. FirstEnergy didn't respond to a request for comment.

"Because Slammer didn't cause any loss of power, it

Power Grid IT Contract Up for Bid

WASHINGTON

The electric power industry this week plans to take the first step in a \$100 billion modernization program by requesting bids for a contract to develop an advanced modeling and simulation system capable of advising utilities on what actions to take in the event of a local power failure.

The contract process is being spearheaded by the Electricity Innovation Institute (EI), a high-tech research and development arm of the Palo Alto, Calif.-based Electric Power Research Institute (EPRI).

The technological centerpiece of the EPRI plan is what's known in the energy industry as a "smart grid" capable of monitoring its own health at all times. It would alert officials immediately when problems arise and automatically take corrective actions that enable the grid to fail gracefully and prevent a local failure from cas-

AT A GLANCE

Recommendations For SCADA Security

- Protect SCADA system networks from the Internet and other company networks via firewalls.

- Firewall rules should deny all network traffic that isn't specifically required for the operation of the critical system and supported operations.

- For open ports, restrict traffic to those addresses from which traffic is expected.

- Do not permit VPN tunneling through the SCADA network security perimeter.

- Restrict remote access to SCADA networks.

SOURCE: NORTH AMERICAN ELECTRIC RELIABILITY COUNCIL

wasn't reported by the utilities that were infected," said an industry executive who had discussions with utility officials.

A spokesperson for the North American Electric Reliability Council (NERC), which is helping to spearhead a task force to study the causes of

last month's blackout, declined to comment on the role the Blaster worm may have played. However, a NERC report dated June 20, 2003, shows that the Slammer worm had a significant impact on some utilities.

In one case, a server on a control center LAN running Microsoft's SQL Server wasn't patched, according to the report. "The worm... apparently [migrated] through the corporate networks until it finally reached the critical SCADA network via a remote computer through a VPN connection," the report states. As a result, "the worm propagated, blocking SCADA traffic."

In a second case documented by Princeton, N.J.-based NERC, a frame relay-based control network using Asynchronous Transfer Mode "became overwhelmed by the worm, blocking SCADA traffic." ■

COMPLETE COVERAGE

Read our "Blaster 2003" special coverage on our Web site:

Go to ComputerWorld.com
www.computerworld.com

be for the larger national grid.

The natural gas industry has used modeling and simulation for several years to improve decision-making during crises.

"We used modeling and simulation this past year when looking at the potential for disruption in the interstate pipelines due to terrorism," said Gary Gardner, CEO of the Washington-based American Gas Association. However, "the nature of gas pipelines is such that you can more easily segment and remove supply," he said.

Joe Wiles, an analyst at Kensa Consulting and a former technical manager at the EPRI, said industry standards are critical.

"Standards are currently being developed in numerous different standards organizations, both in North America and internationally. There is a need for integration between these different standards organizations" before any major modernization programs can move forward, he said.

— Dan Novak

Use of RFID Raises Privacy Concerns

'Smart' tags could profile consumers, critics contend

BY JAIKUMAR VIJAYAN

PRIVACY CONCERN RELATED to the use of radio frequency identification (RFID) technology got an airing at a recent California state legislative hearing.

RFID is a nascent technology that's expected to eventually replace bar codes. It uses low-powered radio transmitters to read data stored in tags that are embedded with tiny chips and antennas.

Proponents of the technology say such "smart" tags can store more detailed information than conventional bar codes, enabling retailers and manufacturers to track items at the unit level.

But privacy advocates who testified at the California hearing last month said the technology has the potential to seriously infringe on personal privacy.

"If ever there was a technology calling for public-policy assessment, it is RFID," said Beth Givens, director of the Privacy Rights Clearinghouse, an advocacy organization in San Diego. "RFID is essentially invisible and can result in both profiling and locational tracking of consumers without their knowledge or consent."

Placing RFID tags on consumer products will allow merchants to capture personal information about shoppers, Givens said.

For example, the information contained on RFID tags could be picked up by readers in a store to reveal where a consumer purchased an item or how much he paid for it. This could result in unacceptable profiling of consumers, she said.

The unique information contained in each RFID tag could also be captured by various readers and used to track a person's movements through tollbooths, public transportation and airports, Givens said.

"So far, the development and implementation of RFID has been done in a public-policy void. What is needed is a formal technology assessment process to be done by some sort of a nonpartisan body comprised of all stakeholders, including consumers," she said.

That sentiment was echoed by Liz McIntyre, a spokeswoman for Consumers Against Supermarket Privacy Invasion and Numbering, a consumer advocacy group that also testified at the hearing.

"Without some sort of oversight, this technology could create a very frightening society," McIntyre said.

"RFID per se is not the big issue," said Greg Pottie, an engineer at the Center for Embedded Network Sensing at the University of California at Los Angeles. "The major questions relate to sharing of digital information, however that information is collected."

A representative from AIM Inc., The Association for Automatic Identification and Data Capture Technologies, a Pittsburgh-based proponent of the use of RFID technology, also testified at the hearing but didn't return calls seeking comment. However, the organization has created a workgroup that's focused on addressing privacy concerns relating to RFID.

According to the organization's Web site, it believes that "RFID presents no more of a threat to individual privacy than the use of cell phones, toll tags, credit cards, the use of ATM machines and access-control badges." ■

Responsible RFID



Inadequate Systems Play Role in Columbia Disaster, Report Finds

Agency failed to integrate critical data

BY DAN VERTON
WASHINGTON

Spaceflight is an inherently risky business, but the National Aeronautics and Space Administration's reliance on e-mail and a flimsy spreadsheet application helped turn risk into disaster.

That's one of the main conclusions of last week's long-awaited final report by the Columbia Accident Investigation Board (CAIB). The board concluded that "deficiencies in communication . . . were a foundation for the Columbia accident."

The CAIB, chaired by retired Navy Adm. Hal Gehman, painted a picture of a massive bureaucracy that relied on informal e-mail communications to manage the in-flight analysis of the damage to Columbia's left wing by a piece of insulating foam that broke loose during takeoff.

This led to a series of discussions that took place in a vacuum, with little or no

cross-organizational communications and often no feedback from senior managers contacted by low-level engineers with concerns about the shuttle's safety, the report said.

In its attempt to answer why a seemingly IT-savvy agency would rely on little more than e-mail to communicate critical analyses, the CAIB discovered that there were deficiencies in problem- and waiver-tracking systems, and that the exchange of communications across NASA hierarchy was limited.

A major element in NASA's management and decision-making failures was its inability to integrate critical safety information and analysis, the report said. "The agency's lack of a centralized clearinghouse for integration and safety further hindered safe operations," it said.

And while NASA does have an automated system in place to track so-called critical items related to safety, "the information systems supporting the shuttle – intended to be tools for decision-making – are extremely cumbersome and difficult to use at any level," the report said.

"The Lessons Learned Information System database is a much simpler system to use, and it can assist with hazard identification and risk assessment," the board concluded. "However, personnel familiar with the Lessons Learned Information System indicate that design engineers and mission

assurance personnel use it only on an ad hoc basis, thereby limiting its utility."

The CAIB report also slammed NASA for its reliance on a modeling and simulation tool called Crater that was, in the board's opinion, "inadequate" to evaluate the damage caused to Columbia by the foam impact.

In fact, Crater is nothing more than a spreadsheet that matches the size of debris strikes with damage to protective heat tiles based on tests and observations from previous shuttle flights.

NASA Administrator Sean O'Keefe said the agency plans within the next 30 days to establish a NASA Engineering and Safety Center to act as the central clearinghouse for all safety data integration and collaboration as recommended in the report.

In addition, he said, engineers will be researching ways to communicate more data from shuttle sensors to ground control centers to give officials more accurate real-time data. They will also work on improving the digitization of shuttle engineering drawings to expedite safety investigations, O'Keefe said. ■



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Responsible RFID

Privacy advocates insist that:

- Individuals have a right to know that products contain RFID tags.
- Individuals also must know where, when and why RFID tags are being read.
- Individuals have the right to know RFID tags are or permanently deactivated when they purchase products or otherwise obtain items containing RFID tags.
- Merchants must be prohibited from exceeding boundaries like keeping the tag "live" on the product.
- The default option - whether to disable a tag or keep it "live" - must be to disable it.

SOURCE: PRIVACY RIGHT CLEARINGHOUSE

Inadequate Systems Play Role in Columbia Disaster, Report Finds

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BRIEFS

CA Agrees to Settle Class-Action Suits

Computer Associates International Inc., said it has agreed to settle three class-action lawsuits that were filed five years ago over its accounting practices. CA will take a pretax charge of \$144 million during its current quarter to cover the deal, under which it will issue up to 5.7 million shares of new stock. The settlement won't affect ongoing government investigations of CA's accounting policies, the Islandia, N.Y.-based company said.

Siebel Adopts New Governance Rules

Siebel Systems Inc. in San Mateo, Calif., plans to make several corporate governance changes as part of an agreement to settle an executive-compensation lawsuit filed last year by the Teachers' Retirement System of Louisiana. Among other steps, the CRM software vendor said it will add a new board member and ensure that only outside directors serve on its executive compensation committee.

Amazon Targets E-mail Spoofers

Amazon.com Inc. said it has filed 11 lawsuits against online marketers in the U.S. and Canada, claiming that they illegally used its name in spam e-mail. One of the alleged e-mail forgers has agreed to a settlement, it added. The Seattle-based online retailer said it's working with Internet service providers to find technical ways to make it harder to spoof e-mail addresses.

Short Takes

SILICON GRAPHICS INC. said it will cut 600 more jobs, reducing its workforce to a total of 3,000 employees. . . . **SUN MICROSYSTEMS INC.** and **HITACHI LTD.** extended through 2006 a deal under which Sun resells Hitachi-made storage devices.

MARK HALL • ON THE MARK

Sun Disputes Claim That Java Handhelds . . .

... lack the security of other Java systems [QuickLink 40320]. Tim Lindholm, CTO of Sun's consumer and mobile systems group, acknowledges that a Java-ready cell phone doesn't have everything in your desktop's Java virtual machine. But to imply that a mobile device's JVM is less secure, "is something we think is an oversimplification," he argues. He says the famous Java "sandbox" that refuses to execute code outside of its domain, thus ensuring software security, remains in force. There are more than 100 million Java devices on the market, and "we've never had anyone break the basic sandbox," he claims. Some class libraries that handle cryptographic functions were the only things removed from a handheld's JVM. Those are important features, but Lindholm suggests that the move isn't so much a security problem for users as it is "an inconvenience for programmers" who want to encrypt data to and from the handset. And Java mobile units will get even more secure next quarter when device vendors start shipping Java handhelds with secure HTTP, which will handle encryption via Secure Sockets Layer. Part of the problem that faces Web developers using Java, claims Hollis Tibbetts, vice president of marketing at M7 Corp. in Cupertino, Calif., is that "as you start adding multiple back-end systems and packaged applications along with business processes, Java becomes difficult to maintain." To the

Motus companies linked to a grant nomination, says a chain will get matched by the end of October in Redwood City, Calif., since Grid1's 22-day deadline is approaching. It will come with features like RFP management, Web services and enhancements for the wireless market.

rescue in three weeks will be the release of the company's upgraded Java developer suites, M7 Enterprise 4.0 and M7 Professional. Both are designed to permit the rapid prototyping of Java applications. Probably more important will be the ability to review the code of live Web pages. The enterprise suite also adds compatibility with WebMethods Inc.'s application connectors, and both versions will be ready to support the Struts framework for Java developers. If your Web application is intended to generate business — and who isn't? — you'd better know what visitors are doing on your site. But if you're rely on analytical tools that depend on a Web site's file logs, as so many do, you're using technology that has "inherent miscalculations," says Gil Simonoff, president of Activity LLC, a start-up in Northridge, Calif. His \$99-a-month Precision Tracking service will analyze your site's traffic in real time using the internal session

cache. Data from it, he purports, can help you "optimize your site to get users to do what you want them to do." You can sign up for a free 15-day trial of the service at www.accelitymarketing.com. What's more, the service can link its visitor-tracking data to opt-in customer communications, thus improving the effectiveness of your spam, e-, or e-mail marketing campaigns.

* If they truly are opt-in messages, the spam-filtering technology from FrontBridge Technologies Inc. is designed to let them pass through. That's because the Marina Del Rey, Calif., company is building a reputation as a *false spam fighter that eliminates false positives*. Most spam filters regularly snag a few e-mails that you really want, forcing you to dig through long lists of spam come-ons and scans from central Africa so as not to miss an important message. San Francisco-based Ferris Research estimates that *false positives cost U.S. companies about \$50 per employee, or \$3.5 billion per year*. Dan Nadir, FrontBridge's vice president of marketing, says most spam filters depend on e-mail users creating their own whitelists, which specify given domains or correspondents whose messages you want to receive. He dismisses that approach as "ceding responsibility to the user." In addition to blacklists and other techniques, FrontBridge's TruProtect Message Management Suite service uses a powerful rules-based engine that runs through 10,000 rules to determine whether a message is spam or legitimate. The result: The company "guarantees" only one false positive per 1 million messages while eliminating virtually all spam. Because spammers continue to improve their techniques, however, FrontBridge intends to add technology by month's end that will track spammers to their source servers and block all messages from them. Almost makes you pity the poor spammer. ■

PeopleSoft Renews Its Anti-Oracle Refund Offer

BY TODD R. WEISS

PeopleSoft Inc. last week said it has reinstated a refund offer that would entitle buyers of its business applications to get their money back, and more, if the company is bought out and the new owner discontinues Oracle products.

The so-called customer assurance program gives new and upgrading customers guarantees that they will be paid two to five times the cost

of their software licensing contracts if the triggering events occur, according to PeopleSoft officials.

The Pleasanton, Calif.-based company first instituted the money-back guarantee in June, after Oracle Corp. announced its hostile bid to acquire PeopleSoft [QuickLink 39343]. The strategy was aimed at keeping worried users from delaying purchases, and it appeared to work: PeopleSoft reported

higher-than-expected sales for the second quarter and said more than half of its license revenue came from deals that involved the refund offer.

PeopleSoft ended the refund program at the end of June, but spokesman Steve Swasey said it's being brought back now because Oracle's takeover bid is still in play. "There has been a lot of uncertainty caused by Oracle," he said. "This thing has lingered on." No expiration date has been set on the offer, he said.

PeopleSoft's decision to again offer refunds was "a sharp move," said Michael

Dominic, an analyst at The Yankee Group. "It's a brilliant sales strategy." He added that he was one of many analysts who didn't expect PeopleSoft to meet its second-quarter sales forecast before it turned to the refund strategy.

But Oracle spokeswoman Deborah Lillenthal said the customer assurance program "is nothing more than an unsustainable gimmick." The refund "is a moot point because Oracle will support all of PeopleSoft's customers for a period that far exceeds the support deadlines PeopleSoft intends to meet," she added. ■

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MARK HALL • ON THE MARK

Sun Disputes Claim That Java Handhelds ...

... lack the security of other Java systems [QuickLink 40320]. Tim Lindholm, CTO of Sun's consumer and mobile systems group, acknowledges that a Java-ready cell phone doesn't have everything in your desktop's Java virtual machine. But to imply that a mobile device's JVM is less secure, "is something we think is an oversimplification," he argues. He says the famous Java "sandbox" that refuses to execute code outside of its domain, thus ensuring software security, remains in force. There are more than 100 million Java devices on the market, and "we've never had anyone break the basic sandbox," he claims. Some class libraries that handle cryptographic functions were the only things removed from a handheld's JVM. Those are important features, but Lindholm suggests that the move isn't so much a security problem for users as it is an inconvenience for programmers who want to encrypt data to and from the handset. And Java mobile units will get even more secure next quarter when device vendors start shipping Java handsets with secure HTTP, which will handle encryption via Secure Sockets Layer. . . . Part of the problem that faces Web developers using Java, claims Hollis Tibbett, vice president of marketing at M7 Corp., in Cupertino, Calif., is that "as you start adding multiple back-end systems and packaged applications along with business processes, Java becomes difficult to maintain." To the

rescue in three weeks will be the release of the company's upgraded Java developer suites, M7 Enterprise 4.0 and M7 Professional 4.0. Both are designed to permit the rapid prototyping of Java applications. Probably more important will be the ability to review the code of live Web pages. The enterprise version also adds compatibility with webMethods' Java application connectors, and both versions will be ready to support the Sun framework for Java developers. . . . If your Web application is intended to generate business — and whose isn't? — you'd better know what visitors are doing on your site. But if you rely on analytical tools that depend on a Web site's log files, so many do you're using bandwidth that has "inherent inaccuracies," says Geoff Simon, president of Acuity LLC, a start-up in Northridge, Calif. His \$99-month Precision Tracking service will analyze your site's traffic in real time using the internal session

cache. Data from it, he purports, can help you "optimize your site to get users to do what you want them to do." You can sign up for a free 15-day trial of the service at www.acuitymarketing.com. What's more, the service can link its visitor-tracking data to opt-in customer communications, thus improving the effectiveness of your email, or, overall marketing campaigns. ■ If they truly are open-in nature, the spam-filtering technology from FrontBridge Technologies Inc. is designed to let them pass through. That's because the Marina Del Rey, Calif., company is building a reputation as an open-in fighter that allows spammers to bypass. Most spam filters regularly snag a few e-mails that you really want, forcing you to dig through long lists of porta-come-ons and scans from central Africa so as not to miss an important message. San Francisco-based Ferris Research estimates that false positives cost U.S. companies about \$50 per employee, or \$3.5 billion per year. Dan Nadir, FrontBridge's vice president of marketing, says most spam filters depend on user inputs creating their own whitelists, which specify good domains or correspondents whose messages you want to receive. He dismisses this approach as "ceiling responsibility on the user." In addition to blacklists and other techniques, FrontBridge's TriProtect Message Management Suite service uses a powerful rules-based engine that runs through 10,000 rules to determine whether an message is spam or legitimate. The result: The company's "guarantees" only one false positive per 1 million messages while eliminating virtually all spam. Because spammers continue to improve their techniques, however, FrontBridge intends to add technology by month's end that will track spammers to their source servers and block all messages from them. Almost makes you pity the poor spammer. ■

PeopleSoft Renews Its Anti-Oracle Refund Offer

BY TODD R. WEISS

PeopleSoft Inc. last week said it has reinstated a refund offer that would entitle buyers of its business applications to get their money back, and more, if the company is bought out and the new owner discontinues PeopleSoft products.

The Pleasanton, Calif.-based company first instituted the money-back guarantee in June, after Oracle Corp. announced its hostile bid to acquire PeopleSoft [QuickLink 39343]. The strategy was aimed at keeping worried users from delaying purchases, and it appeared to work: PeopleSoft reported

of their software licensing contracts if the triggering events occur, according to PeopleSoft officials.

The Pleasanton, Calif.-based company first instituted the money-back guarantee in June, after Oracle Corp. announced its hostile bid to acquire PeopleSoft [QuickLink 39343]. The strategy was aimed at keeping worried users from delaying purchases, and it appeared to work: PeopleSoft reported

higher-than-expected sales for the second quarter and said more than half of its license revenue came from deals that involved the refund offer.

PeopleSoft ended the refund program at the end of June, but spokesman Steve Pussey said it's being brought back now because Oracle's takeover bid is still in play. "There has been a lot of uncertainty caused by Oracle," he said. "This thing has lingered on." No expiration date has been set on the offer, he said.

PeopleSoft's decision to again offer refunds was "a sharp move," said Michael

Dominic, an analyst at The Yankee Group. "It's a brilliant sales strategy." He added that he was one of many analysts who didn't expect PeopleSoft to meet its second-quarter sales forecast before it turned to the refund offering.

But Oracle spokesman Deborah Lilienthal said the PeopleSoft refund offer program "is nothing more than an unsustainable gimmick." The refund offer "is a short-term ploy because Oracle will acquire all of PeopleSoft's customers for a period that far exceeds the support deadlines PeopleSoft intends to meet," she added. ■





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Users Turn to Automated Patch Management Tools

Blaster, other worms highlight need for protection

BY JAHNMEAR VILAYATI

HOW TO better protect themselves against escalating security threats such as the W32.Blastor worm, user companies are taking a fresh look at automated patch management technologies.

These products, which are available from a growing number of vendors, help users look for new patches, scan their networks for vulnerable systems and automatically distribute the appropriate patches when required. But they don't lessen the need for companies to thoroughly test patches before deploying them on their networks, users said.

In the wake of its experience dealing with Blaster, Baker Hill Corp., a Carmel, Ind.-based application service provider, has deployed automated patch management technology from Ecora Software Inc. in Portsmouth, N.H.

For about \$5 per system per year, Ecora's software alerts Baker Hill of new patches, scans its networks for systems

that need them and automatically distributes them, said Eric Beasley, senior network manager at Baker Hill. The technology lets the company schedule patch deployment for specific groups of systems and enables it to quickly roll back patches that don't work.

"Till now, we felt we didn't have the business case to say we want to spend money on a patch management system," Beasley said. But threats such as Blaster have highlighted the need for companies to "patch more aggressively," he said.

Vendors offering patch management products include Shavlik Technologies LLC in Roseville, Minn., St. Bernard Software Inc. in San Diego and PatchLink Corp. in Scottsdale, Ariz. Some vendors, such as Ecora and Configuresoft Inc. in Woodland Park, Colo., offer patch management functions as a component of their configuration management software. And Microsoft Corp. offers a similar function with its Software Update Services.

Driving the need for such tools is the simple fact that manual processes aren't sufficient to enable companies to stay current with patches, said Anthony DeVoto, Windows NT administrator at Volvo Finance North America in Montville, N.J.

There is a need for tools that help companies "more readily identify patches that are applicable to their specific operating environments," said Carl Cammarata, chief information security officer at AAA Michigan in Dearborn, Mich.

With the dramatic increase in the number of vulnerabilities being reported, it has become important for companies to have tools that can automatically deploy only the patches that matter, users said.

According to the CERT Coordination Center in Pittsburgh, more than 4,000 software vulnerabilities were re-

ported in 2002, compared with 2,400 in 2001. Just under 2,000 were reported through July of this year.

"Patch management seems to have found itself a full-time position within IT security departments," DeVoto said.

Volvo is a user of St. Bernard's patch management software and was able to deploy the patches for Blaster in a matter of hours, DeVoto said. Despite the automatic distribu-

tion that's enabled by St. Bernard, no patching is done without testing the software first, DeVoto added.

The fact that patches still need to be tested before they can be deployed has Bruce Azuma, corporate director of information technologies at Broadcom, Ill.-based Wilbert Inc., considering outsourcing the company's patch management functions. "Patching is an area . . . we have a lot of issues with at this time," he said. ■

MORE BLASTER

Read more about the Blaster worm on our special coverage page.

 [QuickLink](#) [\\$3500](#)
www.computerworld.com

PRODUCT INFO

A sampling of patch management products:

VENDOR: Shavlik Technologies

PRODUCT: HFNetChkPro

COMMENTS: Deploys patches in several environments, including Windows NT, XP and 2000, Windows Server 2003, Microsoft Exchange, and Java virtual machines.

VENDOR: St. Bernard Software

PRODUCT: UpdateExpert

COMMENTS: A new feature in the latest version allows the software to be managed by Hewlett-Packard Co.'s OpenView.

Network Associates Adds Low-End Management and Security Tools

Pricing about half the cost of Sniffer line

BY MATT HAMBLETON

Network Associates Inc. last week announced network and security management software for small and midsize users, saying that the products top out in price at about half of the \$12,000 starting cost for its enterprise-class Sniffer tools.

The new Netayst Network Analyzer software is designed for use in managing 10/100 Ethernet installations and 802.11 wireless networks at companies with up to 500 end users, said Chris Thompson, vice president of product marketing at Network Associates in Santa Clara, Calif.

Netayst can automate network and application problem-resolution efforts and provide IT managers with packet-level data about network performance and the functioning of firewalls, intrusion-detection systems and other security technologies, Thompson said.

Austin Bank began testing Netayst early last month on a network that supports operations at 19 branch offices, said Jeff Sowell, a network engineer at the Jacksonville, Texas-based bank. The bank has used the tool to monitor

slow response times on a Microsoft SQL Server database application and to track an apparent network intruder, who turned out to be a telephone technician who was using the network for maintenance purposes without notifying the bank.

Sowell said he looked at several network management products but liked the idea of using a tool from a well-known vendor. In addition, Netayst turned out to be easy to use. An Expert Analysis feature "is handy for somebody

Netayst Network Analyzer

WHAT IT IS: A low-end management tools kit that can pinpoint the root cause of network problems on 10/100 Ethernet LANs—but doesn't include Network Associate's desktop Expert Analysis technology.

WHO IT'S FOR: This other product, along with a higher-end version that provides the Expert Analysis capability, targets both wired and wireless LANs and costs \$9,500.

WHAT IT DOES: The kit includes one year of free product support.

like me that does it do this every day," he said. "It makes any idiot pretty good at analyzing traffic."

Network Associates is primarily known as a vendor of security software for large companies, said Stephen Elliot, an analyst at IDC in Framingham, Mass. But the network management market for smaller businesses is fragmented and not well served by management tools vendors such as IBM's Tivoli Software unit, Computer Associates International Inc. and Hewlett-Packard Co., Elliot said.

The closest competitors to Netayst are products from Ipswitch Inc. in Lexington, Mass., WildPackets Inc. in Walnut Creek, Calif., and Network Instruments LLC in Minneapolis, he added.

Netayst is based on technology that's used in the Sniffer product line, Thompson said. But the new offering will be sold as software, whereas most of the Sniffer products are appliances that include both software and dedicated hardware.

Another distinction between the two technologies is that Netayst won't work on Gigabit Ethernet networks or over WANs, Thompson said. ■

Corrections

The Hands On Reviews feature in our Aug. 25 Technology section ("Handhelds Try to Do It All") incorrectly listed a secure digital extension slot as one of the features built into Handspring Inc.'s Treo 300 handheld device. The overall grade and value for the money rating that were given to the Treo 300 remain the same.

In our Aug. 25 issue's D&W with Microsoft Corp. Vice President Jim Althoff, the value of the contract between Microsoft and the Department of Homeland Security was stated incorrectly. The correct value is \$60 million.

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BY JAHUMLAR VIJAYAN

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Vendors offering patch management products include Sharvik Technologies LLC in Roseville, Minn., St. Bernard Software Inc. in San Diego and PatchLink Corp. in Scottsdale, Ariz. Some vendors, such as Ecora and ConfigureSoft Inc. in Woodland Park, Colo., offer patch management functions as a component of their configuration management software. And Microsoft Corp. offers a similar function with its Software Update Services.

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MORE BLASTER

Read more about the Blaster worm on our special coverage page:

QuickLink a3080
www.computerworld.com

PRODUCT INFO

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PRODUCT: HiWinCheck

COMMENTS: Deploy patches in several environments, including Windows 98, XP and 2000, Windows Server 2003, Microsoft Exchange, and Java virtual machine.

VENDOR: St. Bernard Software

PRODUCT: UpdateExpert

COMMENTS: A new feature in the latest version allows the software to be updated via Hewlett-Packard Co.'s OpenView

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Corrections

The Honda CR-V Recalls issue in our Aug. 25 Technology section ("Honda Recalls CR-Vs for air bag problems") incorrectly listed a recent flight simulator CR-V as one of the four cars built by Honda's Technology Inc.'s Test & Development center. The actual vehicle and date for the recall are the 2002 CR-V model, built from June 2001 to the end of 2002.

In our Aug. 18 article on Microsoft Corp.'s Web Protection for Windows (also in the Technology section), we misstated the name of the company that developed the software. It is called Network Protection, not Network Protection for Windows. The original article also mentioned Microsoft's Internet Security Center.

Military Unit Expands Use of Monitoring Tools to Detect Performance Glitches

Transcom measures application response times with robotic probes

BY MATT HAMBLETON

The U.S. military's unified transportation unit is expanding a deployment of network management tools and robotic PCs that monitor end-user experiences on the global system used to make sure that troops, weapons and supplies arrive on time and in the right places.

The U.S. Transportation Command (Transcom) for more than a year has been using 24 PCs that function as automated probes in an effort to detect performance problems affecting users at its 1,100-worker headquarters at Scott Air Force Base in Belleville, Ill. Now, the unit is beginning to roll out the technology for use on the transportation systems run by the U.S. Air Force, Army and Navy.

Frank Barnard, a civil servant who is team leader of

Transcom's service-assurance section, declined to disclose details about the wider deployment plans. But he said Transcom is expanding the use of the automated probes to the various military branches because the technology has helped improve performance.

The command's IT staff "has been able to identify system failures ahead of system failures," Barnard said. "We don't want customers to tell us when something is wrong."

The robotic PCs used by Transcom are equipped with BMC Software Inc.'s Patrol End-to-End Response Timer software, which starts at \$5,000 per system, plus a set of custom reporting tools.

The PCs are programmed to periodically run different applications and measure how much time it takes to access databases,

internal Web pages and other computing resources.

Barnard said Transcom built a prototype of the system in 2001, two years after it launched a project involving the use of eight other BMC Patrol products to manage different systems on its network.

After the initial Patrol installation, Transcom recorded a 23% increase in its average time between system failures, according to Barnard. But that still wasn't enough to improve end-user performance to desired levels, so the command turned to the robotic PCs. The deployment at Transcom headquarters began several months after the prototype was demonstrated in September 2001.

Undetected Problems

Doug Story, a lead contractor at NCI Information Systems Inc. in McLean, Va., who is working with Transcom, said the PCs can alert systems administrators to performance problems that might otherwise

go undetected.

For example, about two months ago, the PCs detected slow user response times on a variety of applications, which were traced two days later to a proxy server that had been improperly rebooted, Story said.

And six months ago, when some end users were moved to a fail-over site, the PCs found slow response times, even though Transcom's network monitoring tools showed everything running properly. Eventually, a database administrator identified the culprit: a database that needed to be defragmented.

Transcom is about to begin a thorough study of the effectiveness of BMC's tools. But Lt. Col. Scott Ross, a spokesman for the command, said the software has helped Transcom perform much more efficiently during operations in Iraq and Afghanistan than it was able to do during the Persian Gulf war in 1991.

Jean-Pierre Garber, an analyst at Forrester Research Inc.



Transcom's robotic probe, shown here, uses robotic PCs to measure end-user performance.

in Cambridge, Mass., said that Transcom's use of robotic PCs to measure end-user performance is advanced compared with what most IT departments do.

But he added that corporate network managers should make similar measurements, "because applications have grown so complex that nobody has a good picture of how an application works."

Dell to Release Network Management Software

Tools are free for users of its switches

BY MATT HAMBLETON

Dell Inc. this week will announce a set of network management tools that it plans to offer at no extra cost to users of its PowerConnect line of switches.

The OpenManage Network Manager software is designed to help IT staffers centralize the management of PowerConnect installations that include more than 10 switches, said Ulrich Hansen, a senior product manager at Dell, which entered the market for networking equipment two years ago.

Network managers will be able to use the software to deploy firmware updates and

change the configurations of multiple switches with a single operation, saving time and money compared with doing such work on individual devices, Hansen said. In addition, the new products, which join existing OpenManage tools for servers and PCs, can track network gear made by rival vendors, diagnose network problems and schedule data backup operations.

Dell's network management tools could be useful to IT managers at small and midsize businesses, said Stephen Elliot, an analyst at IDC in Framingham, Mass. But he added that they won't compete against

OpenManage Network Management Software

- Discovery and mapping of network environment
- Centralized management of up to 100 Dell switches in large environments
- Efficient management when separate platforms share a common fabric
- Management of multiple vendor equipment through a single interface
- Support for PowerConnect 8000 series switches

the software suites sold by BMC Software Inc., Computer Associates International Inc., Hewlett-Packard Co. and IBM's Tivoli Software unit for managing large networks.

Instead, Dell's technology is comparable to Cisco Systems Inc.'s CiscoWorks software and products developed by

Lexington, Mass.-based Ipswitch Inc., Elliot said.

Steven Cartright, director of systems and support at Omnitel Worldwide Inc. in Omaha, said the financial services firm plans to test Dell's software on its network, which includes 80 PowerConnect switches that are deployed in networking closets and its data center.

Omnitel already uses OpenManage technology to control about 1,000 PCs and 100 servers made by Dell, so the network management tool "will really fit well in our environment," Cartright said.

The company has been using the PowerConnect switches for the past 18 months. The Dell devices cost about one-third as much as comparable switches from market leader Cisco and have performed well, Cartright said. But he added that Omnitel plans to

keep using Cisco products as its primary data center switches and put PowerConnect on the edges of its network.

Another Dell user, Interwest Inc. in Millboro, Del., also plans to evaluate the new management software as its network grows larger, said Chad Elliott, a technology team leader at the maker of animal health products.

Interwest has installed four Dell switches as well as devices made by Cisco. The network management tools will add to the "whole equation" for justifying the use of Dell's hardware, Elliott said. "From what I've heard about the software, it does sound valuable," he said.

Dell offers eight PowerConnect products and has sold about 30,000 of the switches thus far, according to Hansen. "We're still a recent addition to the market, and we have room to grow," he said. ■

BRIEFS

Overseer Calls for Changes at MCI . . .

WorldCom Inc.'s court-appointed monitor filed a report recommending 76 corporate governance changes at the company, which now does business under its MCI brand name. Included in a separation of the chairman and CEO jobs now both held by Michael Capellas, MCI said its board worked collaboratively on the report and has already voted to adopt all of the recommendations.

. . . While Oklahoma Charges Company

Memorial, Oklahoma's attorney general filed 15 felony charges against MCI and six of its former executives over the remaining scandal that led to its bankruptcy filing. MCI said it will cooperate but claimed that punishing the case would punish its customers and employees. Also, MCI launched an offer to buy the remaining shares of Diges Inc., a Laurel, Md.-based heating vendor in which it owns a controlling interest.

Attack Takes Down SCO's Web Site

The SCO Group Inc.'s Web site was inaccessible Aug. 22 through Aug. 25 because of a denial-of-service attack, the second attack launched against the Lincoln, Utah-based company since May. The site was also offline for about 10 hours on Aug. 26. But SCO, which is mounting a controversial legal campaign against Linux, said that damage was done to its Web site in an attempt to mitigate the effects of any future attacks.

Short Takes

MIT confirmed that one of its Web sites was taken off-line after hackers overwrote all of the site's files. . . . COMUSCO HOLDING CO. in Rosemont, Ill., has agreed to sell the assets of its U.S. IT equipment leasing business to BAY4 CAPITAL PARTNERS LLC in Tampa, Fla.

First U.S. Automated Alert Net Goes Live

RAINS-Net a model for possible national system, creators say

BY DAN VERTON

ATTER 16 months of development and testing, a public-private security partnership based in Oregon has activated what is being described as the nation's first fully automated, Web-based regional security alert system.

Known as RAINS-Net and developed by the Regional Alliances for Infrastructure and Network Security, a partnership of 60 IT vendors and more than 300 public and private organizations, the system will provide automated alerts from the Portland 911 center to schools, hospitals, corporate building managers and others.

The network, which started as a pilot project in March, has applications for any national system that the U.S. Depart-

ment of Homeland Security (DHS) might try to create. Charles Jennings, chairman of the RAINS alliance, and others have already briefed the DHS on the network and obtained federal assistance in setting up and designating RAINS-Net to be capable of supporting future homeland security requirements.

There are currently two RAINS chapters, in Oregon and Washington state. However, RAINS executives are in discussions with three other states about expanding the network and alliance membership, Jennings said.

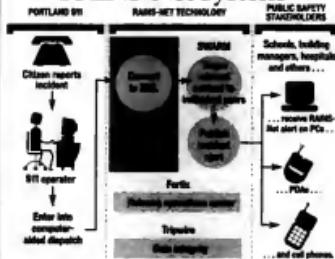
Jennings said other states could replicate the RAINS approach for much less than the \$3 million initial development price — a bargain, he said, given the payoff. RAINS-Net in Oregon is the result of a \$600,000 state grant, thousands of hours of volunteer software development work and technologies donated by big IT

companies that are based in Oregon or have a major presence there, including Intel Corp., Fortis Inc., Tripwire Inc., ScaNNet Networks Inc. and Centerlogic Inc.

"Our nation's security ex-

perts have acknowledged the need for a better way to communicate sensitive information and to coordinate emergency response, [which is] especially critical in post-9/11 America," said Susan Zevin, acting director of the Information Technology Laboratory at the National Institute of Standards and Technology in Washington. "The RAINS-Net approach can serve as a model that could be adopted by cities throughout the nation."

RAINS-Net System



Vendor Upgrades Tools for Detecting Security Flaws During App Development

BY JAHAKUMAR VIJAYAN

Software vendor Sanctum Inc. last week announced an enhanced version of its AppScan software suite aimed at helping companies detect and fix security flaws during application development. Sanctum's AppScan 4.0 suite features new automated testing tools that enable quality assurance (QA) and audit staff to test Web applications for security defects before they're deployed.

The AppScan 4.0 QA edition allows quality testers to automatically create customized scripts for testing, comparing and validating potential security defects in Web applications, according to

Steve Orrin, Sanctum's chief technology officer.

Integrating security testing into the application development life cycle is a lot more efficient than finding flaws in the postdeployment phase, when the risks and costs are much higher, said Pete Lindstrom, an analyst at Spire Security LLC in Malvern, Pa.

The Earlier the Better

Health equipment manufacturer The Nautilus Inc. in Vancouver, Wash., has used an earlier version of Sanctum's software to test for defects in Web applications that have already been deployed.

"What we found out was that it was very expensive to

tools during the application development and quality testing processes as well, with impressive results," he said.

The tools enabled Nautilus to discover flaws in code that could lead to threats such as cookie poisoning, code injection and manipulation, and buffer overflows on the Internet, according to Shmulevsky.

"My developers were very pleased to know they could concentrate on sizing buffers to prevent overflows during the early development stages," Shmulevsky said.

Sanctum isn't alone in this particular market. Other vendors with similar tools include SPI Dynamics Inc. in Atlanta, KaVaDo Inc. in New York and Centric Inc. in Campbell, Calif.

"Any large company that is doing significant Web development is looking at these tools," Lindstrom said.

NEW PRODUCT



BRIEFS

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BY DAN VERTON

AFTER 16 months of development and testing, a public-private security partnership based in Oregon has activated what's being described as the nation's first fully automated, Web-based regional security alert system.

Known as RAINS-Net and developed by the Regional Alliances for Infrastructure and Network Security, a partnership of 60 IT vendors and more than 300 public and private organizations, the system will provide automated alerts from the Portland 911 center to schools, hospitals, corporate building managers and others.

The network, which started as a pilot project in March, has applications for any national system that the U.S. Department

of Homeland Security (DHS) might try to create. Charles Jennings, chairman of the RAINS alliance, and others have already briefed the DHS on the network and obtained federal assistance in setting up and designing RAINS-Net to be capable of supporting future homeland security requirements.

There are currently two RAINS chapters, in Oregon and Washington state. However, RAINS executives are in discussions with three other states about expanding the network and alliance membership, Jennings said.

Jennings said other states could replicate the RAINS approach for much less than the \$5 million initial development price — a bargain, he said, given the payoff. RAINS-Net in Oregon is the result of a \$60,000 state grant, thousands of hours of volunteer software development work and technologies donated by big IT

companies that are based in Oregon or have a major presence there, including Intel Corp., Fortix Inc., Tripwire Inc., Swan Island Networks Inc. and Centerlogic Inc.

"Our nation's security ex-

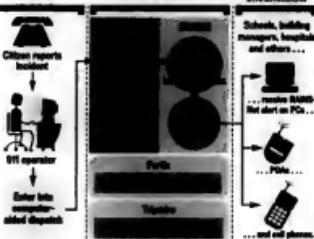
ports have acknowledged the need for a better way to communicate sensitive information and to coordinate emergency response, [which is] especially critical in post-9/11 America," said Susan Zevin, acting director of the Information Technology Laboratory at the National Institute of Standards and Technology in Washington. "The RAINS-Net approach can serve as a model that could be adopted by cities throughout the nation."

RAINS-Net System

PORTLAND OR

RAINS-Net TECHNOLOGY

PUBLIC SAFETY STAKEHOLDERS



Vendor Upgrades Tools for Detecting Security Flaws During App Development

BY JANUARYN VIJAYAN

Software vendor Sanctum Inc. last week announced an enhanced version of its AppScan software suite aimed at helping companies detect and fix security flaws during application development.

Sanctum's AppScan 4.0 suite features new automated testing tools that enable quality assurance (QA) and audit staff to test Web applications for security defects before they're deployed.

The AppScan 4.0 QA edition allows quality testers to automatically create customized scripts for testing, comparing and validating potential security defects in Web applications, according to

Steve Orrin, Sanctum's chief technology officer.

Integrating security testing into the application development life cycle is a lot more efficient than finding flaws in the postdeployment phase, when the risks and costs are much higher, said Pete Lindstrom, an analyst at Spire Security LLC in Mahwah, Pa.

The Earlier the Better

Health equipment manufacturer The Nautilus Group in Vancouver, Wash., has used an earlier version of Sanctum's software to test for defects in Web applications that have already been deployed.

"What we found out was that it was very expensive to

catch security omissions and mistakes" at that stage, said Mark Shmulevsky, a systems architect at Nautilus. As a result, the company recently began using Sanctum's testing



tools during the application development and quality testing processes as well, with impressive results.

The tools enabled Nautilus to discover flaws in code that could lead to threats such as cookie poisoning, code injection and manipulation, and buffer overflows on the Internet, according to Shmulevsky.

"My developers were very pleased to know they could concentrate on sizing buffers to prevent overflows during the early development stages," Shmulevsky said.

Sanctum isn't alone in this particular market. Other vendors with similar tools include SPI Dynamics Inc. in Atlanta, KaVaDo Inc. in New York and Centric Inf. in Campbell, Calif.

"Any large company that is doing significant Web development is looking at these tools," Lindstrom said.

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Global Standard Will Force Changes in Banks' IT

Tighter database integration, new risk management engines will be needed

BY LUCAS MEARIAN

A proposed international regulation that would require banks to tighten their integration of different back-office systems and use more sophisticated risk management tools is expected to be finalized in the fourth quarter, thus pushing companies to begin capturing customer data for compliance purposes by late 2004.

The Bank for International Settlements (BIS) in Basel, Switzerland, is overseeing development of the new standards, and it plans to require the 10 largest U.S. banks to comply by the end of 2006. From an IT standpoint, the proposal being considered by the BIS calls for banks to take steps such as developing rules-based risk management engines and knitting together customer databases.

Complying with the new Basel Capital Accord, which is known as Basel II, could cost the U.S. financial services industry \$12 billion by 2006, according to a report released last month by TowerGroup in Needham, Mass.

Approximately 20 of the nation's largest banks would likely have to spend between \$50 million and \$100 million each on technology in order to minimize the amount of money they must keep in reserve to offset credit and business risks, said TowerGroup analyst Guillermo Kopp.

Exercising Caution

If it's approved as expected, Basel II will increase the minimum amount of money that banks need to set aside to cover potential risks, which currently equals 8% of the total capital they have on hand. The regulation will also add a new category of operational risk management, involving possible problems such as late payments or trades that don't get processed because of systems or data-entry errors.

But Basel II would provide undetermined financial incentives for institutions that manage risk more proactively through the use of rules-based engines and internal reporting standards, Kopp said. He added that improved automation of internal processes also could produce money-saving efficiencies and help users minimize their exposure to risks.

Nonetheless, the Basel II proposal is generating concerns among both large banks and smaller institutions.

For example, America's

Community Bankers (ACB), a trade group in Washington that represents local banks, is opposed to Basel II as it currently stands. ACB spokesman Jim Eberle said the group believes that requiring the installation of sophisticated IT systems would place an unfair financial burden on small banks and savings-and-loan firms. "It's our understanding that it does require a big outlay for a small institution to be able to do calculations for internal risk models," Eberle said.

Meanwhile, Citigroup Inc. Chief Financial Officer Todd Thomson said in a July 31 letter to the BIS committee shepherd the Basel II proposal

Taking on Risk

that measures proposed in the latest revisions would place banks on an uneven playing field with one another and put

them at a disadvantage against other financial services firms.

The policy-based systems envisioned by BIS would be tied to so-called advanced measurement approaches requiring at least two years of historical transaction data about customers. To meet Basel II's 2006 compliance deadline, banks would have to begin implementing the advanced policy engines and capturing data next year.

According to TowerGroup's report, U.S. banks with international operations will be hardest hit by Basel II's increased capital reserves requirement. But the impact of the new regulation will be felt more widely, Kopp noted. "Over time, everybody will need to comply," he said. ▀

McData Aims to Buy Its Way To Better Storage Switches

Plans to acquire two vendors, invest in a third

BY LUCAS MEARIAN

McData Corp. last week announced plans to acquire two vendors of storage networking products and invest in a third company, as part of an effort to gain a functionality edge over storage switch rivals Brocade Communications Systems Inc. and Cisco Systems Inc.

Broomfield, Colo.-based McData said it will buy Nishan Systems Inc. for \$83 million in cash and pay \$102 million for Sanera Systems Inc. In addition, McData is paying \$6 million to Aarohi Communications Inc. for a 15% ownership stake and the right to use the San Jose company's software and processors in a new line of intelligent switches.

Together, the three deals are designed to help McData broaden its existing line of directors for Fibre Channel storage-area networks (SAN) to include storage-over-IP capabilities. The technology additions will also expand the port count on the devices it sells

from a maximum of 140 now to 256, said Mike Gustafson, senior vice president of worldwide marketing at McData.

Sunnyvale, Calif.-based Sanera previously its 256-port DS10000 Datacenter-Class Director at the Storage Networking World conference in April but has yet to ship the product.

Gustafson said that in addition to the higher port count, a key technology being developed by Sanera is dynamic partitioning, which lets IT managers carve up a switch in order to support different applications separately.

Nishan, which is based in San Jose, makes multiprotocol switches that use the Internet Fibre Channel Protocol and Internet SCSI to transport

block-level data over Ethernet. Nishan's switches encapsulate Fibre Channel and SCSI data packets with IP headers, allowing users to connect low-end servers to SANs for data backups or to link remote SANs.

Gustafson said McData expects to close the acquisition by October and then immediately make Nishan's switches available to storage vendors on an OEM basis.

Sanera's switch is in beta-testing and is due for shipment in next year's first quarter, he added.

Support for the Fibre Channel over IP protocol also is in McData's product plans, and the company intends to bring together the new devices and its existing switches under a single management platform.

Denis Van Dale, network administrator at Steinbach Credit Union Inc. in Stein-

ARRAY UPGRADE

IBM sets up its FAST/1600 midrange disk array
► Details at www.computerworld.com

bach, Manitoba, uses Nishan's switches to replicate banking data and other information from the company's primary data center to a backup site over a wireless IP network (QuickLink 3/7).

Van Dale said that for now, he's not concerned about diminished support for the switches in light of the McData buyout. But, he added, "time will tell."

Follow the Leader

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"Brocade needs to play catch-up," she said. "They're the ones that are behind." ▀

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Tighter database integration, new risk management engines will be needed

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Taking on Risk

Basel II pricing-based software attempts to determine the credit risk of customers.

IT together islands of data center data to better track their operational risks.

IP-VLAN internal firewalls, routers designed to mitigate operational risks.

that measures proposed in the latest revisions would place banks on an uneven playing field with one another and put

them at a disadvantage against other financial services firms.

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A Look at the Technologies McData Is Buying

Internet SCSI protocol support for connecting remote servers to SANs

Fibre Channel over IP capabilities for tunneling between SANs

Data mirroring and replication functionality through a SAN switch

A 256-port director that can be clustered to support up to 1,024 ports

MARYFRAN JOHNSON

Rogue Warriors

WHO'S IN CHARGE HERE? When it comes to IT projects, that would be you and your technology group, right? If only reality would stop intruding.

If only there were no such thing as "rogue IT," the catch-all term for those unauthorized, independent purchases of technology that scoot beneath the radar of almost every sizable IT shop. This uninsured influx may include anything from wireless devices, PDAs and Linux desktops to instant messaging or PC applications. In "Dealing with Rogue IT," our lead management story on page 27 (and online at QuickLink 40666), reporter Gary H. Anthes examines the numerous creative ways senior IT managers are coping with these rogue projects.

To get a quantitative fix on how serious the problem is, we surveyed 108 IT professionals on Computerworld.com and found that a rather astonishing 90% were all too aware of rogue projects under way in their companies. One figure in particular leapt out, making it harder to castigate those unruly users for taking matters into their own hands: Our survey respondents admitted that 38% of their unauthorized IT projects were successful.

Not a bad score for a bunch of amateurs.

Of course, the down sides of rogue IT can be just as striking. Money squandered. Business operations disrupted. Company security compromised. Small departmental systems blossoming into expensive, badly designed enterprise applications. Careers scuttled. As one CEO in our story lamented in the aftermath of a minor ERP disaster, "Had they come to us...we'd have helped them choose [the right product], helped write the scope of work, identified consultants, identified hardware and generally played a significant advisory role."



Those last three words are the ones to focus on: significant advisory role. The future of IT isn't about command and control — it's about forging deeper, more supportive relationships with your business users. Engage them. Enlighten them. Enable them.

"When I look at the IT of the future, it really becomes a lot more of a competency center, for program management, contract management, relationship management," says Greg Schaeffer, CTO at Mercury Insurance Group in Los Angeles. He sees the definition of rogue IT evolving in a more positive direction, and he hopes that IT organizations will evolve with it.

How to do that? Consider trying some of these ideas:

- Focus on the bright financial upside. Funding IT projects through the business units just about guarantees

more dedicated ownership and involvement on their parts.

- Infiltrate user departments whenever feasible. At Geisinger Health System, the IT people who support the lab equipment share space with the user experts who manage and run it.
- Encourage a certain amount of user exploration, but keep tabs on it. At Blue Cross and Blue Shield of Minnesota, business users get all the leeway they want during the technology assessment phase of a project. But once system design and development kick in, so does the IT group.

- Make sure all the likely suspects in your business units are familiar with your corporate technology standards, including databases, PCs, operating systems, e-mail and query tools. Make it known which vendors are preferred partners. Who wants to pay full price when there's a bargain available?

- Ask yourself some hard questions about why users are hiding their technology needs from you. How much static is there on those communications lines between IT and the business units?

Finally, assume that rogue installations will increase in the future, and plan accordingly. Figure out how to join forces. Become their expert advisers. Get back in charge. ▶



PIMM FOX

Dodge Spam By Going One-to-One

GIVE UP. After spending hours battling Blaster worm variants and setting e-mail filters to block Sogic.F, I surrender. The e-mail spammers, hackers and miscreants win. I no longer expect e-mail to function consistently. It acts more like a vintage automobile that takes constant tinkering. For essential communication, it's time to look elsewhere.

A promising alternative is a one-to-one communications channel that bypasses e-mail entirely. (No, I'm not talking about the telephone.) Ironically, this solution comes from the same group blamed for lots of spam: marketers.

RealConnect is a small client-side application that works with a transactional server. It creates a one-to-one private communications channel. And it was designed by San Rafael, Calif.-based DataLode Inc. to give marketers a way to reach customers.

The transactional server waits for a connecting agent (the thin client) to be verified and in real time relays information over an open port. For example, a user might ask a trusted online vendor for a travel itinerary based on price and date. When and if that information is matched against a database, a one-to-one message is sent in the form of an icon, an audio alert or an instant message. The one-to-one message can have an SMTP wrapper enabling interaction with back-end systems and navigation through corporate firewalls.

The procedure was created because messages customers had requested (for example, "Send me details when a product is on sale for 50% off") were being blocked as spam. Indeed, online travel company Orbitz uses the technology to notify people who have already approved the receipt of offers.

While this one-to-one private channel was built to make selling easier,





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GOALS The other stories must also serve the main purpose of the article.

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Agenda Snapshot*

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Monday, October 27

Pre-Conference Workshops (Ticket Required)

- 8:00am-9:00am Industry Prices, Cost Recovery and Skills Development Trends
- 9:00am-10:00am SANS Technical Session
- 10:00am-11:00am SANS Technical Session
- 11:00am-12:00pm Buffet Luncheon at the Miss Golden Bell Casino

Tuesday, October 28

Plenary Conference - Day One

- 7:00am-8:00am Continental Breakfast
- 8:00am-9:00am Keynote and Plenary Presentation
- 9:00am-10:00am General Session
- 10:00am-11:00am General Session
- 11:00am-12:00pm General Session
- 12:00pm-1:00pm Technical, Technical/Workshop, Breakout and SANS Tracks
- 1:00pm-2:00pm Technical, Technical/Workshop, Breakout and SANS Tracks
- 2:00pm-3:00pm Technical, Technical/Workshop, Breakout and SANS Tracks
- 3:00pm-4:00pm Technical, Technical/Workshop, Breakout and SANS Tracks
- 4:00pm-5:00pm Technical, Technical/Workshop, Breakout and SANS Tracks
- 5:00pm-6:00pm Technical, Technical/Workshop, Breakout and SANS Tracks

Wednesday, October 29

Plenary Conference - Day Two

- 7:00am-8:00am Key Note
- 8:00am-9:00am SANS Breakfast Briefing
- 9:00am-10:00am General Session
- 10:00am-11:00am General Session
- 11:00am-12:00pm General Session
- 12:00pm-1:00pm Technical, Technical/Workshop, Breakout and SANS Tracks
- 1:00pm-2:00pm Technical, Technical/Workshop, Breakout and SANS Tracks
- 2:00pm-3:00pm Technical, Technical/Workshop, Breakout and SANS Tracks
- 3:00pm-4:00pm Technical, Technical/Workshop, Breakout and SANS Tracks
- 4:00pm-5:00pm Technical, Technical/Workshop, Breakout and SANS Tracks
- 5:00pm-6:00pm Technical, Technical/Workshop, Breakout and SANS Tracks

Thursday, October 30

Plenary Conference - Day Three

- 7:00am-8:00am Continental Breakfast
- 8:00am-9:00am General Session
- 9:00am-10:00am General Session
- 10:00am-11:00am General Session
- 11:00am-12:00pm General Session
- 12:00pm-1:00pm Technical, Technical/Workshop, Breakout and SANS Tracks
- 1:00pm-2:00pm Technical, Technical/Workshop, Breakout and SANS Tracks
- 2:00pm-3:00pm Technical, Technical/Workshop, Breakout and SANS Tracks
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- 4:00pm-5:00pm Technical, Technical/Workshop, Breakout and SANS Tracks
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For more information and to register,
visit www.sans.org or call 1-800-883-8000 or e-mail sans@sans.org

companies can also use it to keep employees tuned into specific corporate events or information without relying on e-mail. And because this channel comes as a service with tools designed for marketers, there's no need to have an army of programmers setting up expiration dates for messages, directories of approved recipients or preferences for the look and feel of the messages. If you can make a PowerPoint presentation, you can use this.

Another space problem is storage. Your systems may be storing this junk (desktops certainly are) without your knowledge. With one-to-one private communications, you specify what's to be kept and what's not. Also, this type of communication isn't browser-based, so you're not at the mercy of security snafus related to viewing the Internet.

One-to-one communication isn't for everything — and there's still the issue of replying securely — but it's an innovative alternative when you know you're locked in.

THORNTON MAY

Redefining 'Heroic' IT Leaders

DURING the past eight months I have been deeply involved in a multiyear global research project involving hundreds of CIOs and aimed at better understanding the evolving CIO "habitat." I've discovered that it's a varied and exotic ecosystem indeed.

The data collected puts the competencies surveyed into four performance categories:

• Poor IT shops	22%
• Average IT shops	39%
• Good IT shops	23%
• World-class IT shops	10%

Paying particular attention to performance inflection points (that is, the practices that separate poor IT shops from average IT shops, average IT shops from good IT shops and so on), the data revealed several competency areas affecting overall performance of IT organizations.

One area of operational excellence inherent to all of the world-class IT

shops in the sample was a "managed mind-set" toward IT. The concept of a managed mind-set shouldn't be trivialized as academic speak or spin; nor should it be demonized as mind control.

Progressive CIOs in our research have revised how they think about IT. At the core of the rethinking was a fundamental change in the perception of what constitutes heroic IT.

Popular culture paints heroes in bold, John Wayne strokes, portraying them as bigger-than-life performers riding in to save the day. Day-to-day workers are often stereotyped as Dilbert-like victims or George Babbitts, practitioners of narrow-mindedness and selfishness, like the antihero of Sinclair Lewis' novel *Babbitt*.

Analysis of the academic literature on heroism indicates a perceptual bias



that demands certain pre-conditions for heroism to occur. That is, for someone to become a hero, something perceptibly bad or extraordinary must happen first. It is no accident that America's most respected presidents all served during times of great national trauma, though not all trauma leads to greatness.

In "old-think" IT shops (those not in the world-class category), staffers perceived as heroes are the ones who fix things when they break, do multiple all-nighters to deliver projects close to deadline or deliver to business users what they were told was impossible to achieve. How efficient is that approach?

CIOs are no stranger to heroic circumstances. Indeed, 63% of the CIOs in the Global 2,000 arrived at their po-

sition heroically — they're generally regarded as having salvaged a desperate situation left by a predecessor.

As an optimistic futurist, I am obligated to ask: In a world where IT doesn't break down as much as it does today, in a world where IT is well run, will there be opportunities for IT heroes to emerge?

World-class IT shops have redefined IT heroism to include the everyday heroes who build systems that run as promised, who are afraid of personal responsibility and who are unwilling to accept quick fixes that gloss over problems without getting to the roots.

This is the definition for IT heroes you should be using in your company. You'll be surprised at how many of them you'll find in your organization.

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READERS' LETTERS

Outsourcing Acceptance Is Hard to Find

HEY DAVID MOSCHELLA concerning the security issues of code being generated in parts of the world that are hostile to the U.S. ("Outsourcing Is Good," *QuickLink* 40327)? In the same issue that the column was, just look at the front page and the description of Dan Verton's book, *Black Ice on Cyberterrorism*.

Steve Farley
Account executive,
PPF Inc., Lancaster, Pa.
sfarley@ppfinc.com

I UNDERSTAND the business case for moving jobs overseas, but since it's based on derived from these jobs, I have to wonder why our politicians have never done more to protect them. Maybe we haven't yelled loud enough yet. Then again, maybe David Moschella is right. Maybe the U.S. needs to encourage industries to send jobs overseas, even jobs that serve the American public directly. Maybe we should embrace that trend and expand it to other industries that are overseas for modernization. As a start, I know some guys in India who make very good opinion columnists.

David Woodhead
Software engineer,
Raleigh, N.C.

FAR POINTS ALL, by Dead Moschella. I remember the steel industry contraction of the 1980s and '90s, but the scary thing about the IT contraction is that it has been about 10 times faster. Overnight, the perception of technical people has gone from being wizards, gurus and (affectionately termed) geeks to being dull, commodity drivers. Job security has vanished. Things will eventually come back into balance, but this trend will extract a steep human cost in the meantime. Companies that exploit conditions needlessly risk a backlash either from the government or from workers mobility improve.

Timothy Wood
San Francisco

SOMETIMES in the marketplace, short-term economics wins over what's wise for the longer term. If we lose out on exploiting the talents of a highly trained pool of professionals simply on the basis of cost per thousand lines of code or hourly pay, we not only risk our country's security but also the competitiveness of U.S. companies around the world. It's been said that the modern economy is global and the problems local, but the U.S. risks giving away the local competi-

tive advantages it has in its workforce through political neglect and a short-term focus.

Charles Oates
Consulting software engineer,
Ashburn Motors,
crwz@yahoo.com

OUTSOURCING will spell nothing but long-term economic trouble for our country. In these times of huge deficits and tax refunds, corporations that lay off and send IT jobs offshore are assisting in further weakening our country's economic engine. Middle-class workers pay federal income taxes. Social Security taxes and Medicare taxes. Corporations receive far too many tax breaks to make up the difference. Every job lost to a foreign land means that an American taxpayer is no longer helping to fund our defense, social services and health care. Where will that money come from? Yet, outsourcing will be a short-term win for corporate America's bottom line, but the long-term effects will be monstrous.

Verne E. Bell
Chicago

WHEN I'm Computerworld digging up columnists like David Moschella and Ward Larkin ("Outsourcing Is Less of a Threat Than You Think," *QuickLink* 404907) surely their articles are a

test to see if people are reading the publication and if they'll respond to paid highest. Both Moschella and Larkin fail to mention the eroding effect on the U.S. when everything is produced offshore and shipped in. And they failed to speak to the cultural mismatch that will show up, not only in the software produced, but also in the most basic of communications.

Their acceptance of the IT outsourcing trend is appalling. While it's true that businesses will do what they feel is in their best interest and that getting up-front won't do any good, lying down in spinneys acceptance will do far less.

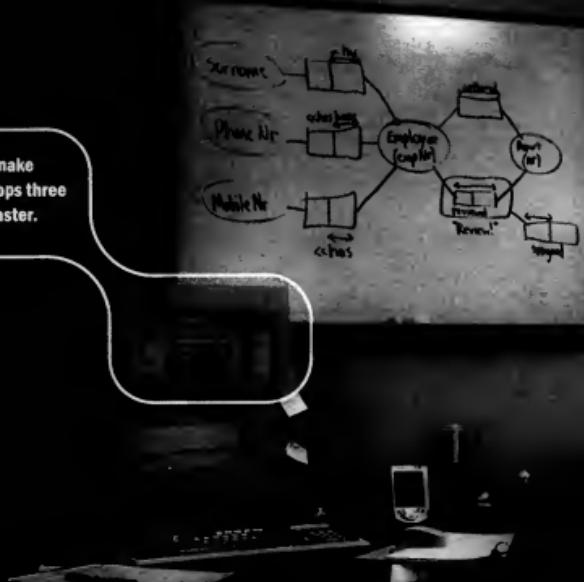
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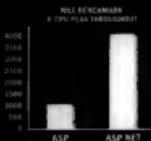
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TECHNOLOGY

09.01.03

Stretching Tape Technology

Tape is still the main backup medium for most organizations and is likely to remain so for at least another 10 years as vendors prepare faster drives, better management tools and tapes that can hold terabytes of data. [Page 20](#)



FUTURE WATCH

Genie II: Man and Machine Thinking as One

IT may soon make it possible for humans and computers to "think together" in real time to anticipate and preempt terrorist threats. [Page 22](#)

SECURITY MANAGER'S JOURNAL

New Spam Policy: Return to Sender

Vince Tuesday's strategy to automatically return suspected spam before it can hit users' mailboxes works perfectly — almost. [Page 23](#)

WHEN YOU HAVE CONSOLIDATED computer systems from 500 corporate acquisitions, you get pretty good at IT integration.

Indeed, nothing so distinguishes IT at Corporate Express Inc. as the degree to which it simultaneously links major supply systems — its own and those of customers and suppliers. The \$55 billion, Bloomfield, Colo.-based vendor of office supplies for the business market has, in essence, become an extension of its line of customers.

"Integration is one of our core competencies," says CIO Lisa Peters, who has seen her IT shop grow from 12 people to more than 300 in the past nine years.

Corporate Express has for years taken orders for furniture, paper, computer supplies and other office products by telephone, fax and electronic data interchange. In 1997, it began offering customers Internet-based procurement via a simple CD-ROM catalog. Now, more than half of its 75,000 daily orders arrive electronically, most as

XML transactions through a richly featured Web portal called E-Way.

The smallest of Corporate Express' 30,000 customers, which typically lack their own automated procurement systems, log onto E-Way and conduct purchasing transactions much as a consumer might at Amazon.com. These buyers have also placed many of their unique procurement rules into E-Way, so that, for example, E-Way checks budgets, buyer authorizations and other controls for customers.

But 750 of the company's largest customers — which account for some 80% of its sales volume — have a more direct connection to E-Way. Corporate Express has integrated E-Way

into the processing fabric of their internal procurement systems. That involved integrating with some 40 different commercial packages from companies ranging from Arista Inc. to Commerce One Operations Inc. and eScout data LLC. These customers start to build orders locally, but then bridge to E-Way by leveraging the integration features offered by each vendor's product. For example, Corporate Express uses PunchOut for integration with Arista, RoundTrip for Commerce One, ConnectScout for eScout and so on.

Although customers can maintain their own versions of the Corporate Express catalog, more often the catalogs are maintained by and at Corporate Express. Every catalog is tailored to its user's format, terminology and buying practices.

"E-Way knows all the customer rules — for example, that they don't buy desks from us, so desks will be blocked out," says Wayne Aiello, vice president of e-business services. "E-Way actually becomes the customer's system, so every customer has to be examined and treated differently."

Corporate Express is doing about 10 new customer integrations per month. They take 10 to 20 days — with requirements definition, coding and testing taking equal amounts of time — but the first few projects took 10 times that long.

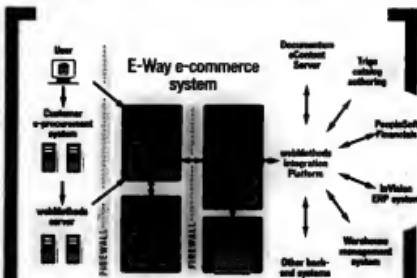
FIELD REPORT

Corporate Express Goes Direct

THE B2B OFFICE PRODUCTS VENDOR IS SLASHING COSTS BY INTEGRATING TIGHTLY WITH CUSTOMERS' PROCUREMENT SYSTEMS. BY GARY H. ANTHES

TECHNOLOGY

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The E-Way Architecture

Behind the scenes in the E-Way system, customer orders, acknowledgments, invoices and other transactions flow between customers and E-Way as XML transactions by way of two Internet service providers.

Orders from small and medium customers that use E-Way as their procurement system go to the E-Way Web server and pass through the webMethods Integration Platform server directly into InVision Corporate Express' ERP system. Orders from the 750 large customers whose own e-procurement systems have been integrated with E-Way interact with Integration Platform from webMethods.

Integration Platform is the enterprise application integration (EAI) "layer" that ties Corporate Express' e-commerce, ERP, warehouse management and financial systems. After some translating and format standardization, the EAI layer sends the transaction to the InVision ERP system, where it's processed like any other order. InVision sources the order and sends it to its own warehouse or to a wholesaler for pickup and delivery the next day.

E-Way is a three-tier system. At the top of the San Microsystems Inc. Solaris servers running Apache Web server software. Files, such as catalog page in-

ages, are stored on a Linux server and then cached on Solaris Web servers using the OpenAFS enterprise file system.

The second tier, a JBoss application server, is a combination of JavaBeans and services. It houses a large Sun Fire ISK server with the third tier, the Oracle database server running PL/SQL procedures.

Corporate Express is migrating the E-Way application code from Oracle PL/SQL to Java 2 Enterprise Edition (J2EE). That will allow separation of presentation functions from business logic in JavaServer Pages, making code more modular and hence easier to maintain, says Bret McNamara, vice president for e-business technologies. It will also make code more scalable and efficient, he says. The J2EE architecture will use several open-source software tools, such as Shuts, Tiles and Velocity - frameworks for developing Java applications that facilitate breaking applications into their functional parts.

Finally, Trip Technologies Inc.'s Product Center software maintains product catalog information and publishes it to E-Way and other systems. The eContent Server from Documentum Inc. maintains an archive of Web site content, including reports and billing.

- Gary H. Antes

"The hardest thing three to four years ago was that nobody in the industry had done it," Aiello says. "XML was the buzzword, but it was really new. Platforms like Arista and CommerceOne were beginning to gain a lot of hype, but there weren't people who had actually implemented them."

The company buys off-the-shelf software when it can, but much of E-Way

and its other supply systems were developed in-house. Commercial packages often aren't scalable or flexible enough to accommodate the unique needs of customers, the company says. For example, Corporate Express developed its own search engine tailored to the characteristics of its own supply catalog.

Unocal Corp., in El Segundo, Calif., used to buy from Corporate Express by

telephone and fax, but has now integrated its Oracle Corp. procurement system with E-Way. Michael Comeau, e-procurement tools manager at Unocal, says he likes E-Way's ability to send all invoices to a central point for payment, its buying controls and its order-tracking ability. "Maverick spending is reduced tremendously," he says.

Meanwhile, Trisha Smallwood, manager of mail center operations at The Kroger Co. in Cincinnati, says she likes E-Way because it saves her five minutes on every order. No more filling out an order form, faxing it and waiting for confirmation. The process is made even simpler, she says, by E-Way's ability to maintain a list of items that Kroger orders frequently as well as the special prices and terms that the grocery chain has negotiated.

Data, Data, Everywhere

Corporate Express uses software from webMethods Inc. in Fairfax, Va., to integrate its major logistics and financial applications. Any information from those sources is potentially malleable to implement to customers using the webMethods integration tool. Corporate Express already uses that tool to retrieve real-time inventory balances from its InVision system and send them to customers via E-Way. But if an item isn't in stock, it doesn't tell buyers when it might be on the shelves again. Soon E-Way will automatically retrieve the item's estimated date of receipt based on the supplier's information system.

Corporate Express also plans to push more order-status information to customers, including who signed for a delivery at the customer's site. A point-of-delivery device will capture that data and send it via a service of Author Systems Inc., a warehouse management system, where webMethods can grab it and present it to the E-Way user.

Getting to Real Time

E-Way started out with a much simpler objective. "When it started, it was essentially a one-way order system, an online catalog," says Wayne Aiello, vice president of e-business services. "They'd find a product and send an order into InVision," the company's ERP system.

That has changed, however. "We're transforming itself into a two-way interface between us and the customer," he says. "As we continue to add more interactions, we are bringing more information from the supply chain forward to the customer."

Corporate Express has a number of supply chain and financial systems, plus interfaces with the systems of its suppliers. Any information from those sources is potentially malleable to implement to customers using the webMethods integration tool. Corporate Express already uses that tool to retrieve real-time inventory balances from its InVision system and send them to customers via E-Way. But if an item isn't in stock, it doesn't tell buyers when it might be on the shelves again. Soon E-Way will automatically retrieve the item's estimated date of receipt based on the supplier's information system.

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Gary H. Antes

ability are always huge issues for us," he says. "Our average order size is [small], so it takes a lot of transactions for \$5 million a day on our Web site."

While grabbing data using webMethods is "theoretically easy," Aiello says, optimizing performance can be tough. "At any point, you have thousands of people on the site placing orders. Making something available to 3,000 users simultaneously is a challenge."

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TECHNOLOGY

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As backup needs grow, tape vendors are preparing faster drives, better management tools and terabyte-size tape cartridges. By Lucas Mearian

LIKE MANY IT EXECUTIVES, Eric Eriksen, chief technology officer at New York-based Deloitte Consulting, would like tape to just go away. The added cost of managing tape backup systems, slow and unreliable restoration, cartridge inventorying and off-site storage databases have him hoping that cheap disk drives may someday replace 50-year-old tape technology in the data center.

"We only need tape for cases where we can't restore from disk. It's a necessary evil," he says.

Yet despite a drastic shift toward low-cost Advanced Technology Attachment disk arrays for backing up business data, there's no end in site to the use of tape in the data center — especially for archival storage. Administrators may complain, but tape still has an enormous installed base and remains 10 to 50 times less expensive than disk. It's also very secure, since data stored off-line on removable media is physically inaccessible to hackers and viruses.

And vendors and analysts say evolu-

tionary advances in the basic technology in midrange tape drive systems, improvements in management tools, and the emergence of combined disk/tape subsystems are likely to answer some user complaints — and keep tape technology in data centers for at least another decade.

Bigger and Faster

Manufacturers of the three leading midrange tape drive technologies — digital linear tape (DLT), linear tape-open (LTO) and advanced intelligent tape (AIT) — are preparing significant capacity and speed improvements. Advanced drives, including SuperDLT (SDLT), SuperAIT (S-AIT) and LTO Ultrium 2 (LTO-2), are the latest variants. Each uses half-inch tape and offers roughly five times the capacity and performance of standard DLT, AIT and LTO tapes [For a more detailed explanation of these technologies, go to QuickLink 4042].

For example, DLT was developed in 1986 and the average cartridge originally held about 96MB of data. SDLT today holds 160GB. Over the next

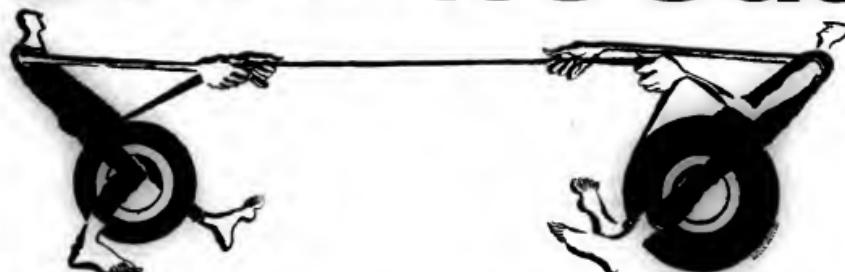
decade, SDLT will grow to about 2.5TB native capacity with 250MB/sec. throughput. LTO, which derives its name from its open architecture, could grow to 10TB native capacity by 2011.

Vendors say ITB tape cartridges could appear as early as next year. Tape manufacturers such as Quantum Corp., Certance LLC and Storage Technology Corp. expect tape to more than meet future needs. That's a tall order, since the amount of data produced by the average enterprise is doubling every year, according to Stamford, Conn.-based Gartner Inc.

To keep up, tape media will evolve to have more than 1,000 tracks and a thickness of 6.9 microns (about as thick as cellophane). And it will also work with drives that write on both sides of the tape, says Jeff Laughlin, director of strategy for the automated tape solutions unit at StorageTek in Louisville, Colo.

In contrast, StorageTek's current high-end tape drive, the proprietary T9940B, uses 200GB, one-sided tape that has 576 tracks and is 9 microns thick. Laughlin expects transfer rates to keep up with the larger capacity tapes as well. "There's more money being spent on tape media research than ever before in history. You're going to see greater transfer rates at the head interface, transfer rates of 100GB/sec., 200GB/sec.," he says.

TAPE TECHNOLOGY Stretches Out



Choosing the Right Format

Will the S-DLT, LTO-2 or S-AIT tape drive technology you're using today be around tomorrow? Most likely, vendors and analysts say, although some users are finding reasons to switch from one another.

Even with software advances in S-DLT, more users are buying LTO-2 drives these days. Bob Amatruda, an analyst at Freeman Reports in Ojai, Calif., says LTO-2 appeals to users because its open architecture offers a choice of vendors. Hewlett-Packard Co., IBM and Compaq, Calif.-based Centaur all manufacture LTO-2 products, whereas only Quantum produces DLT and S-DLT drives.

In July, Quantum put self-diagnosing intelligence into its S-DLT drives, a move that analysts

MARKET WATCH

say will help boost sales. Quantum also says it has plans for at least four more incarnations of S-DLT, and the vendor has 35% of the overall tape market - more than any of its competitors. But John Peasling, president of StoServer Inc. in Colorado Springs, a manufacturer that sells all three tape technologies, still gives LTO the edge. "LTO is open and makes more sense, and it's 2006B native [versus 160GB for the latest S-DLT 320 drives]," he says.

Deuterio Eric Eriksen says he's looking at moving from HP tape libraries, with eight S-DLT drives each, to a single HP or ADIC 10K tape library using LTO drives for greater capacity in a smaller footprint. He says the decision isn't being driven so much by LTO-2's open-

ness, but by its compression rates and speeds, which - for the moment - exceed those of S-DLT. He also says that the new LTO-2 libraries are more scalable than his older system.

"One of the things that's important when we're doing streaming across multiple tape drives is to be able to restore quickly," he says, referring to LTO-2's 2006B capacity and 35MB/sec. throughput.

That doesn't matter to Phil Andrews, director of high-end computing at the supercomputing lab at the University of California, San Diego. He has avoided LTO Ultim because he says it lacks the track record of reliability that he requires. "We've looked at LTO, but we have to be conservative because we're holding a lot of people's data here," he says.

And while LTO has a capacity and performance edge over S-DLT today, analysts say the

two tape technologies continuously leapfrog each other in capacity and throughput, so other factors may be more important.

S-DLT and LTO-2 may be neck and neck in speeds and leads, but Sony Electronics Inc.'s S-AIT leapfrogged both with the vendor's introduction of a 500GB, 30MB/sec. drive in December - and it's likely to remain ahead for some time, based on current S-DLT and LTO road maps (see graph, below).

S-AIT also has the edge in pricing: S-AIT tape cartridges are \$80 vs. \$120 for 2006B and \$130 for S-DLT. Sony intends to develop and support S-AIT through at least a sixth generation, says Stephen Becker, vice president of storage solutions at Sony in San Jose. But S-AIT's appeal has been limited because, as with S-DLT, only one manufacturer produces the drives.

- Lucas Mearian

Smarter

Emerging management software that can monitor the health of tape drives, Fibre Channel switch port connections to libraries and even the tape cartridges themselves will help ensure that users are able to restore from tape, more easily manage backups and predict problems and backup failures, vendors say. Advanced Digital Information Corp. (ADIC) and Quantum, for example, have recently introduced native management software tools on their tape library and drive technology.

ADIC sells all major tape cartridge technologies in its automated libraries and tape autoloaders, but Dave Uewell, an executive director at the Redmond, Wash.-based company, says he believes cartridge formats and drive technologies are becoming irrelevant. Instead, ADIC is betting on new, intelligent tape library systems that will eventually provide detailed information on drives and tape, whether it's related to a downed switch port, a stuck drive or a tape cartridge that's reaching the end of its life.

One example of archival intelligence is ADIC's Scalar i2000 tape library. Introduced in early July, the Scalar i2000 is designed to eliminate the need for an external library control server. Among other things, the system can send backup failure alerts via pager or e-mail, partition a library into multiple logical libraries and perform mixed media, performance and proactive system readiness checks.

In July, San Jose-based Quantum also introduced DLTsage, a suite of predictive and preventative diagnostic tools

that run on its S-DLT tape drives to help ensure that backups have completed successfully. The applications can also tell administrators when drives have reached critical thresholds for capacity and predict where and when errors may occur.

Here Come the Hybrids

While disk-to-disk backup is already popular, during the coming year, manufacturers plan to introduce more hybrid systems that combine disk with tape libraries in storage-area networks for faster backups and restores and easier archiving. ADIC, for example, plans to introduce a combined tape/disk library this month.

"You won't just have tape. One could imagine RAID-protected disk where L/Os from the backup job are completed at [wire] speed while the [library] robot, through management software, stages it on tape drives for archival," says StorageTek's Laughlin.

Ultimately, however, scalability and restorability will continue to be the key criteria to take into account when selecting tape systems, says Deloitte Consulting's Eriksen. "We're looking for a single solution that can cover everything, regardless of the needs we have," he adds. ■

TAPE VENDOR LINKS

To get a sampling of vendor offerings for S-AIT and LTO-2 tape drives, go to our Web site QuickLink #40571

To learn more on the subject, visit our Storage Knowledge Center
 QuickLink #1790
www.computerworld.com

Tape Gets Faster... .



... As Cartridge Capacity Grows to Terabytes



Source: Quantec.com, Life Sciences, Sony Electronics Inc.

Some of the technology shown in last year's blockbuster movie *Minority Report* may soon be a reality and a centerpiece of the intelligence community's war on terrorism. In the futuristic thriller, Tom Cruise played the head of a police unit that uses psychic technology to arrest and convict murderers before they commit their crimes.

Research into new intelligence technology is taking place as part of a \$54 million program known as Genoa II, a follow-on to the Genoa I program, which focused on intelligence analysis.

In Genoa II, the Defense Advanced Research Projects Agency (DARPA) is studying potential IT that may not only enable new levels of collaboration among teams of intelligence analysts, policy-makers and covert operators, but could also make it possible for humans and computers to "think together" in real time to "anticipate and preempt terrorist threats," according to official program documents.

"While Genoa I focused on tools for people to use as they collaborate with other people, in Genoa II, we are also interested in collaboration between people and machines," said Tom Armour, Genoa II program manager at DARPA. Speaking at last year's DARPA-Tech 2002 conference in Anaheim, Calif., "We imagine software agents working with humans ... and having different sorts of software agents also collaborating among themselves."

Genoa II may be shelved because of its central role in the controversial Terrorism Information Awareness program, but private-sector researchers say many significant advances are still possible and are, in fact, already happening.

For example, private-sector researchers are studying cognitive amplifiers that can enable software to model current situations and predict "plausible futures." Researchers are also on the verge of creating practical applications to sup-

GENOA II: Man and Machine Thinking as One

Can software algorithms predict a terrorist's next move before he makes it? By Dan Verton

port cognitive machine intelligence, associative memory, biologically inspired algorithms and Bayesian inference networks, which are based on a branch of mathematical probability theory that says uncertainty about the world and outcomes of interest can be modeled by combining common sense with evidence observed in the real world.

Anticomplexity

The goal of all of this research is to find a way to make computers do the one thing they aren't very good at: mimicking the human brain's ability to reduce complexity. Computers are good at doing things like playing chess but are incapable of "seeing" and deciphering a word within an image. Biologically inspired algorithms — the mathematical underpinnings of cognitive machine intelligence — could change that.

"One way to make computers more intelligent and lifelike is to look at living systems and imitate them," says Melanie Mitchell, an associate professor at Oregon Health & Science University's

School of Science & Engineering in Portland and author of a book on genetic algorithms. "People have already done that with the brain through neural networks, which were inspired by the way the human brain works."

"In the brain, you have a huge number of simple elements — neurons — that are either on or off and are working in parallel. And in ways that are still fairly mysterious, that seems to collectively produce very sophisticated learning," says Mitchell.

But there are other exam-

ples of astounding possibilities, all of which have potential applications in the war on terrorism. For example, Mitchell points to ongoing studies in genetic algorithms that are inspired by evolution — a computer program that evolves a solution to a problem rather requiring a person to try to engineer one. Likewise, researchers are beginning to produce security applications that mimic the human immune system, she says.

Hurting Forward

Despite formidable technological challenges, there have been successes that could become real products and applications in the next 12 to 24 months. One of those successes has been in the development of inference networks.

"Some of the core algorithms we are working with have been around for centuries," says Ross Kohl, director of technology at San Francisco-based Autonomy Inc., a firm that makes advanced pattern-recognition and knowledge management software.

"It's just now that we're finding the practical applications for them."

For example, Autonomy uses a proprietary blend of Bayesian statistics and Claude Shannon's Information Theory, which says it's possible to separate critical elements of information from large streams of audio data, to produce algorithms that are making computers smarter and able to learn.

"We're able to produce an algorithm that says here are the patterns that exist, here are the important patterns that exist, here are the patterns that contextually surround the data, and as new data enters the stream, we're able to build associative relationships to learn more as more data is dispersed by the system," says Kohl.

The computers of tomorrow will also know when two or more intelligence analysts are interested in or working on the same problem and will automatically link those analysts and their data, he says.

In fact, many automotive and aerospace manufacturers have used rudimentary pieces of this type of capability and have saved millions of dollars by leveraging developmental expertise across functional areas, says Kohl. Likewise, such computers could be able to spot a person leaving a suspicious bag at an airport and automatically alert security.

"We're no longer looking for information; information is looking for us," Kohl says.

Bat Grant Evans, CEO of A4Vision Inc. in Cupertino, Calif., and an expert in cognitive machine intelligence and biologically inspired algorithms, says he thinks he has an idea of where it's all leading. "The algorithms today, particularly biometric algorithms, are very intuitive, meaning the more you use them, the more they learn," says Evans. "Now we're integrating cognitive machine intelligence in the form of video with avatars [3-D digital renderings of real people] that can see and track you. That's the computer of the future."



New Spam Policy: Return to Sender

Kicking back suspected spam dramatically reduces unwanted e-mails, but not before creating an endless loop of confusing messages. By Vince Tuesday

WE'VE been trying to control the problem of spam, and at long last, we can see light at the end of the tunnel.

My security team and I already use an outsourced service that identifies spam and labels each message accordingly. It does a surprisingly good job, but most users still read every spam-labeled message, even though only one in 10,000 e-mails is incorrectly marked.

Last week, we implemented the next phase: We reconfigured our e-mail gateway to return spam to the sender.

Now the end user never sees any e-mails identified as spam. Instead, we send those e-mails back to the return address and give the sender instructions on how to be added to the "allowed" list. This process uses fax rather than e-mail, so it costs senders time and effort. But we figure that if they are legitimate business users, they'll follow this simple process.

Just over half of our daily e-mail is spam, so returning it saves enormous amounts of disk space and e-mail server processing power.

A Rare Thank You

Seven days into using the new system, it's working like a dream. We've had no complaints, and a handful of users even phoned to say thank you — a pretty rare experience for my team.

We've seen back hundreds of thousands of messages, and only one sender asked to be

added to our allowed list. That's a near-perfect record.

But we've had some problems. Here's one: We send our returned messages from a specific not_read@company.com e-mail address. We were initially worried that by doing so we might inadvertently create e-mail loops.

Some of the spam comes from semilegitimate companies that use a genuine source address and have an autoreply on that address. We worried that our returned spam would cause them to send us an autoreply that would be marked as spam and returned to them, which, of course, they would reply to with another message that we thought was spam and so on.

So we put in a rule that if the incoming e-mail is addressed to not_read@company.com and is marked by the antispam company as spam, then our rule discards it instead of sending another alert.

Since it's likely that many of the return addresses on spam e-mails are fake and that innocent users will receive our replies, we made sure our responses were polite. In fact, half the messages

we returned bounced. This means that the not_read account gets pretty busy. But after this week of bedding in, we really won't read messages sent to it. Instead, we will just delete them.

We thought we had covered all the fairly obvious problems pretty well, but we hadn't thought of everything. I was surprised to come in one day to find that the team that monitors the postmaster e-mail accounts was unhappy with us.

Endless Autoreplies

Our system's autoreply to a spam from an online catalog vendor had received a reply from that vendor's autoreply system, and our postmaster account had received tens of thousands of messages overnight. It seemed that somehow we had created a loop that included the postmaster account.

As with most Web sites, our postmaster account is read by a real person. This gives administrators a way to contact other administrators to troubleshoot problems with the e-mail system itself.

In our case, for some reason the postmaster account had replied to every message sent to not_read, and that account was getting autoreplies back from the online catalog company. But the not_read account wasn't receiving any of these messages, so it was difficult for us to investigate.

We looked into all kinds of bizarre theories. Perhaps our e-mail was being spoofed by a spammer to get back at us? Perhaps our outsourced service was blocking them because of the number of messages to and from this account? It was frustrating. Then I began to think about why an e-mail in-box wouldn't have any new mail in it. I asked the

team, and one of them suggested that it might be full.

I could only laugh, because that was the sort of question we should have asked at the beginning, not after we had wasted our time investigating wild theories. The not_read mailbox had filled up with all the rubbish being returned, and the postmaster account was returning every subsequent e-mail sent to not_read to the sender. But every message returned to the catalog company received an autoreply to the postmaster account.

Once we deleted all the old messages in not_read, we stopped the problem. But it was a bit embarrassing to know that our antispam system had spammed our own e-mail administrators.

I do feel guilty about pushing the problem of sorting through the spam back onto the sender. It would be better if everyone was civilized and could trust themselves to send only things we want. But we have to pay to receive spam that uses up our network bandwidth, e-mail server resources and the recipient's time, so I feel justified in forcing the senders of e-mails that look like spam to jump through a few hoops.

A handful of spam messages still get through each day. And already, our users have acclimated to the dramatically lower levels of spam and are complaining that even this reduced level is unacceptable. It's good that we're being pushed to always improve, but I hope we can convince users that this current level of control is right for the issues that spammers pose now. Maybe, just maybe, it will hold until new laws are passed and enforced and spamming finally drops away.

WHAT DO YOU THINK?

This week's column is written by a real security manager, **Vince Tuesday**, whose name and employer have been disguised for his protection. Contact him at vince.henderson@comcast.net, or join the discussion in our forum, [QdLInk.zdnet.com](http://QdLink.zdnet.com).

To find a complete archive of our Security Manager's Journals, go online to computerworld.com/secjournal.

SECURITY LOG

Security Bookshelf

Book 002: IT Security and HIPAA
By Jon Tolson and William A. Arbaugh, Addison-Wesley, 2002.

The practice of wireless LANs has been disrupted by fundamental security technology to the point where WLANs have become

quasi-legitimate. This book explains what's wrong with the WEP Encryption Protocol and what the industry has done to fix the issue by providing an introduction to the Standards IEEE 802.11i Protected Access and IEEE 802.11x, which specify the use of the Temporal Key Integrity Protocol and the Advanced Encryption Standard.

This book provides a fairly detailed guide to installing wireless networks securely and includes a key working example using free software.

This is a good handbook for WLAN administrators who want to avoid the security pitfalls that have plagued wireless networks to far.

—Mike Resnick

Device Provides Key Storage for Windows 2003

McGraw-Hill, a division of The McGraw-Hill Companies, Inc., has announced its latest product for Windows, the JustKey. It provides a line of hardware-based cryptographic keys designed specifically for use with the Microsoft Corp.'s Windows Server 2003 and the latest version of the company's desktop operating system, Windows XP Pro SP2.

The JustKey is designed to work with the Windows Internet Information Server (IIS) 6.0 and will allow users to store and manage cryptographic keys used in secure Windows Server 2003 and XP environments.

With the JustKey, users can store and manage keys from 512,000 to 943,200.



Our antispam system had spammed our own e-mail administrators.

SHARP.

Digital Document Security and IT: Everything you need to know.

Q: What are the most significant digital copier security issues?

A: We are actually servers that queue and permanently store multiple documents/files providing administrator access to the document. As a minimum, most digital copiers retain the last document processed; some even retain multiple documents, totaling hundreds of pages. Others redirect print jobs when the printer is busy or jammed, making "denial of service" attacks possible.

Q: How does Sharp protect the network interface?

A: The Sharp Ethernet card allows administrators to restrict access and disable unnecessary protocols. With this network card, the Sharp digital copier is essentially protected by its own firewall.

Q: How can you be sure that security products actually perform as claimed?

A: The Common Criteria Evaluation and Validation process by the U.S. National Security Agency and the National Institute of Standards and Technology—evaluates security solutions. Products that are validated under the program meet security levels consistent with ISO 15408 methodology.

Q: How can Sharp improve IT security?

A: Sharp offers print privacy solutions designed to restrict unauthorized personnel from seeing confidential materials. Copier access can be controlled and monitored, while documents retained in printer/copier memory are immediately cleared to eliminate unauthorized access.

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PAUL A. STRASSMANN

The Curse of IT Infrastructure

IN JULY, the General Accounting Office published what I consider a rare insight into IT spending. The agency broke down the \$26 billion Department of Defense IT budget into the following categories: business systems, \$5.2 billion; business infrastructure, \$12.8 billion; mission support (including its own separate infrastructure), \$8 billion.

Less than half of the total cost is accounted for by the share of spending that directly and visibly supports users. The lion's share goes toward the "infrastructure"—the hole from whence bugs, disruptions and mysterious failures come.

Here we have an audit confirming what I have seen creeping up on IT for more than 20 years: It isn't the applications but the need to support a costly infrastructure that has been dampening the funding for technological innovation.

You can always get votes for adding another attractive application. But hardly anybody will sign up to support an infrastructure that may be serving customers who aren't paying their way. Selling tickets for seats in fancy rail cars was always easy. Finding money to pay for the track, switches, signal equipment and the fuel depot was always much harder.

The root cause of IT failures and excessive IT costs in large organizations lies in rickety infrastructures put in place one project at a time. What you usually have in large organizations is not a secure, low-cost and reliable infrastructure but a patchwork of connections cobbled

together without sufficient funding and rushed to completion without sufficient safeguards.

The currently fashionable approach is to impose centrally dictated "architectures" to cure the pains from incompatible and redundant systems. Such architectures are just another way of achieving order through centralization and consolidation. Unfortunately, under rapidly changing conditions, such a

cure may be worse than the original disease.

Invariably, centralization involves the awarding of a huge outsourcing contract to a vendor for whom a critical piece of the infrastructure is carved out, such as the management of desktops. Associated servers, switches and data centers may also be included in the IT territory coded to the outsourcer, while the resident IT bureaucracy always keeps tight control of a few fatally critical components in order to retain its absolute power.

This approach to fixing infrastructure deficiencies is flawed because the sequence for fixing a broken setup is backward. Contracting for an infrastructure should be the last—not the first—step in putting improved systems in place.

First, IT managers should focus on determining which applications must be delivered immediately. The reliability, affordability and timing of application services will dictate which one of the many conceivable infrastructures would work best to solve high-priority problems.

Second, the organization's management structure and business goals must be set. I don't see how one can get funding for overhauling infrastructure as a separate investment. As a credible business case, such investments offer notoriously sterile ground. Infrastructures must be designed so that each step can be financed with incremental funding. Such economics make outsourcing of infrastructure services to a computing "utility" the preferred solution. The recent huge wins by a computer services firm offering "on-demand" usage pricing is a good sign that customers are ready to buy computing "by the quart" instead of owning a farm.

Third, a feasible transition plan for legacy applications must be developed and tested prior to making the least risky technical choices.

Only after the completion of this sequence would it be safe to proceed with outsourcing. Precipitous contracting for infrastructure services is only for the hasty and the impatient (who will be long gone when the auditors finally show up). *

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Printers in Proprietary Information Loss Survey (1995-2002) ©2003 Sharp Electronics Corporation

How secure is your digital information?

Protect your information with the Data Security Kit from Sharp. Financial facts, personnel records, customer lists: networked copiers/printers process sensitive information every day. Unfortunately, their hard drives can also be accessed via the network, contributing to \$60 billion worth of information theft every year.¹ To protect this weak link in your

corporate security, we've created our Data Security Kit. It's the first copier and printer protection to be validated by Common Criteria, a government-sponsored program, and it's available only with our Digital IMAGER™ series of copiers/printers. Sharp's Data Security Kit. Enhanced information protection at your fingertips. sharpusa.com/security

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MANAGEMENT

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Global Toolbox

Managers try various tools — including videoconferencing and distributed software — to help keep tabs on offshore contractors. [Page 29](#)

Business Rules Come First

Don't start an IT project without a clear set of written rules about the way your company conducts business, advises Ronald G. Ross in this excerpt from *Principles of the Business Rule Approach*. [Page 30](#)



QUOTE OF THE WEEK

"The technology that you create bears the marks of your team just as a stone ax shows the marks of an ancient flintknapper.

— Paul Egan, Computerworld contributing columnist and principal of C2 Consulting.



DEALING WITH Rogue IT

Bootleg IT projects are going on behind your back. Here's how to cope.
BY GARY H. ANTHES

CIO JOSEPH PUGLISI says he had no idea the IT project was going on. And, he says, the Emcor Group Inc. business unit installing the ERP package had no idea it had selected a product that Puglisi had earlier reviewed and panned. "Ultimately, the project was a disaster," he says.

"It was all done under the radar," Puglisi explains. "They spent more than a year fumbling along trying to make it behave in a way that would suit their business. Finally, they did ask for corporate guidance, but they had to get on bended knee

and plead for funding to displace that failed implementation effort."

It might have been otherwise at the Norwalk, Conn.-based construction and facilities management company. "Had they come to us, we would have said, 'Here are the choices that we think are contenders,'" Puglisi says. "We'd have helped them choose one, helped write the scope of work, identified consultants, identified hardware and generally played a significant advisory role."

Systems projects done without the knowledge or oversight of the IT organization, so-called rogue projects, may spring up because users see IT as a source of red tape or excessive cost. Or because they're looking for temporary or quick-and-dirty systems that they see as low-risk. Or they don't see the IT implications of what appear to be non-IT projects. Whatever the reason, rogue projects often have unintended consequences. Things can get hurt — budgets, schedules, business units, operations, careers and sometimes the corporate system that IT does maintain.

Most IT executives admit that rogue projects go on in their companies (see *Computerworld* survey, next page), but there's considerable disagreement over whether the practice should be snuffed out or facilitated. In my view, CIOs employ a wide range of strategies for dealing with these bootleg projects.

Not Enough Cope

David Swartz, CIO at George Washington University in Washington, says rogue projects aren't all bad. The danger comes, he says, when a small, isolated system grows into an enterprise application without the careful stewardship of IT.

"It all seems innocently enough at the school," Swartz says. An administrative department asked AT&T Corp. to develop a debit card system that students could use to buy meals and other things. IT wasn't involved. Soon someone realized that the card system could be expanded to control access to parking, and then access to buildings. "More and more user departments piled on, until it became an enterprise application," Swartz says.

At least he saw it coming. "I reviewed their procedures and controls. They had no backup, no redundancy. If the server failed, guess what — not only can you not get into the parking lot, you can't get into the building, and you can't buy food. The university shuts down."

Based on that review, Swartz persuaded the university to give him the back end of the system, the operational side. But before he could put in his controls

MANAGEMENT

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COMPUTERWORLD

The vast majority of the 108 IT professionals surveyed said rogue IT projects and unauthorized products are a fact of life in corporate America.

■ 90% said there are computer projects under way in their companies that don't involve the IT department.

■ 56% said their companies have policies that are significant IT projects from being undertaken without IT department approval or control.

■ 88% said IT products are being installed in their companies without the authorization or support of the IT department.

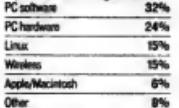
METHODOLOGY: Computerworld received responses to an online survey from Aug. 5 to Aug. 10, 2003. A total of 108 completed surveys were collected. Responses came from both management (38%) and technical staff (62%) areas of IT, as well as contracting/billing (7%).

IT projects done outside the IT department tend to be:



NOTE: 106 responses to the question; what doesn't equal 100% because of rounding.

What type of unauthorized products are being installed?



NOTE: Multiple responses allowed.

and protections, the server did go down and stayed down for a day. "They had to station policemen in all the buildings," Swartz says. "But we have 80 buildings, and there weren't enough police, so we had to station other employees to guard the buildings."

And that wasn't the end of it. Problems persisted because the user departments had kept the application development side of the system. They upgraded the software without testing it, and that caused all kinds of outages and problems," Swartz says. "Now they are moving the application side to us as well."

In the wake of that debacle, senior university management decreed that a policy on rogue IT be developed. Among other things, it will stipulate that any application that spans more than one department must be owned by central IT, Swartz says.

The Phase Matters

John Ouelian, CIO at Blue Cross and Blue Shield of Minnesota, looks not so much at the organizational scope of an IT project as whether it's in the assessment, design or development stage. Users may conduct the assessment phase of a project, even a large and complex one, on their own. But in the later phases of a project, even a tiny one such as the installation of a single PC, IT must be involved.

"I have a higher tolerance for rogue projects in the assessment phase," Ouelian says. "It shouldn't be so paranoid. The business area really has the accountability in terms of what needs to be done, and IT has the accountability for how it's implemented."

Geisinger Health System in Danville, Pa., has largely mitigated the risks from rogue projects by placing IT staffers in the user departments where these projects might occur. "We have people who support laboratory sys-

tems in the same physical location as the laboratory management people. Same for radiology, same for the business office," says CIO Frank Richards.

That's a good model for a company with a lot of specialized equipment with hooks into IT, Richards says. "The business units have learned over the years that it's better to have us involved upfront, because sooner or later, they are going to want to connect whatever it is, such as a piece of radiology equipment, to the network, and they can't do that without us," he says.

Richards says a department recently wanted to buy a physician-reporting system but hadn't worked closely with central IT. "We said, 'No, no, no, we really have to go through a process here, do a needs assessment, look at the ROI and look at how it fits into your workflow.'"

Indeed, workflow turned out to be a problem. The system would have greatly reduced the time it took an examining physician to create diagnostic reports, "but they didn't have the staff to turn the rooms fast enough to get the doctor to see the next patient," Richards explains. "It was very eye-opening for them to realize that even though we don't know clinically what they do, we understand workflow and can help them translate that into what the system will and won't do."

Times Are Changing

Greg Schueiman, chief technology officer at Mercury Insurance Group in Los Angeles, says the definition of rogue technology is changing, and IT departments should change with it.

"Having IT be the absolute gatekeeper and owner over everything isn't

the right way to think in the IT office," he says. "It's thinking in the business IT office, the core IT department. If you know there's a rogue IT project, for example, then we'll [decide] is it compatible as vendor-supplied equipment? Something like that, to try to understand why you're doing your project."

Richards was a contractor for Geisinger Laboratories in Lancaster, Pa., and his objective was to make sure users' needs no matter what.

"We had customers who were in pain and saying, 'I need to do this and we'd appreciate the on-site IT consultant,' and I'd say, 'We can't do that, but if you can take a look at our Web site, you can find out how to get funded.' The idea is, 'Do we do any work at all, or do we result?'

Sometime, the next IT group found out about these IT projects. "Brett was never c'mon in and say, 'Look at this acknowledgement.' But eventually they got over it because of the benefit of staying 'Merchandise' in our culture, and it's been great. We'd tell them what we're doing and how it was going, and they might be able to use it in their department."

— Gary H. Anthes

going to work in the future, because other executives are going to develop a lot of expertise in these areas," he says. "When I look at the IT of the future, it really becomes a lot more of a competency center for program management, contract management, relationship management."

For example, Schueiman says, the IT shop should apply its special skills in IT contract negotiations. He says he recently delayed a project, "while the user was championed at the bit," in order to better negotiate with a vendor. "By waiting, we were able to save several hundred thousand dollars," he says.

So what should CIOs do when they discover rogue IT projects in their companies? Says Encor's Puglisi, "Take a look at yourself and try to understand why it would happen. Perhaps they had a bad experience with your user, or with you, or maybe they don't know about you."

INSIDER TIPS

Don't get stuck in end-user departments that negotiate contracts with application service providers.

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When Rogue Is Right

The IT shop at J.R. Simplot Co., a \$3 billion agribusiness concern in Boise, Idaho, often allows other departments to undertake IT projects. That can happen if the IT department doesn't have the resources needed at the time or when the system draws on expertise uniquely available in some other business unit, according to COO Roger Parks.

Here are some examples:

- The company's online wholesale food shop, SimpleFood.com, was developed by the marketing department and a Web development company.
- People with IT experience in Food Group Plant Operations are developing a manufacturing management system

■ The human resource department oversees the outsourcing of a learning management system.

■ IT personnel in Ag Business Plant Operations developed plant-specific environmental, health and safety systems.

■ AgBusiness subject-matter experts and on-site IT people developed tools to extract and analyze maintenance and procurement performance metrics from the company's ERP system.

Parks says he has succeeded in helping even geographically scattered users by publishing IT standards for all users in areas such as databases, query tools, PCs, servers and e-mail.

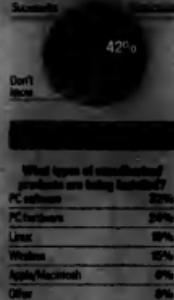
— Gary H. Anthes

COMPUTERWORLD SURVEY

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INSIDER TIPS

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- Gary H. Anthes

SHARE THE PROCESS for managing an offshore IT operation into a pyramid, and at the top are personal visits. Directly below that are videoconferences, followed by telephone calls, e-mail, instant messaging and distributed software development tools. At the bottom are daily, weekly and monthly reports.

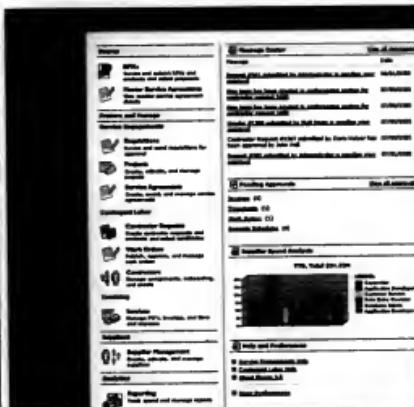
One person who has used many of those pyramid levels is Ravi Vellanki, operations manager at Best Buy Co. Vellanki moved from India to the U.S. in 1997 at the age of 24 and lives in the Minneapolis area. But last year, he returned to India for a two-year assignment to manage Best Buy's offshore development in Chennai.

The Richfield, Minn.-based electronics retailer has several hundred developers in India, many with outsourcer Wipro Ltd., to handle the management and development of more than 500 applications.

Vellanki relies on a variety of methods to communicate with the home office, but one important tool is videoconferencing. "There is no question, in my view, that seeing the faces adds to the effectiveness of communications," he says. Vellanki adds that videoconferencing technology needs to improve, but it does the job. "The personal touch is there, the integrity is there — even though it's only an intangible, we find it unavoidable," he says.

Manage Your Contractors

There are tools and techniques for managing every aspect of offshore work. For instance, Fieldglass Inc. in Chicago has software for procuring and managing contract IT labor. And



ELANCE software can manage service-level agreements and invoices, consolidate message traffic and analyze spending patterns. Both the client and contractor need to install the software — but contractors tend to go along as a contingency for getting paid, Elance officials say.

Elance Inc. in Sunnyvale, Calif., has software for procuring services and managing the contractual relationship. Elance's software automates the tasks of contract compliance and payment schedules: If the contractor hits the milestones, it gets paid; if it doesn't, there are financial penalties.

On the more nitty-gritty level of software development, there are collaborative software development tools. Users say these tools are good for quickly assembling relevant data while ensuring

that everyone involved has a shared view of the information. This often means keeping e-mails addressing particular issues in a central location and making sure they are cross-referenced.

Best Buy relies on Wipro's project management tools, such as Cocoon, which tracks projects and their progress and provides for a discussion forum among other features. Outsourcing vendor Cognizant Technology Solutions Corp. in Teaneck, N.J., also makes its own collaboration envi-

Managers try various tools, from videoconferencing to collaboration software, for managing offshore contractors.
By Patrick Thibodeau

ronment, called eCockpit. In addition, there are third-party tools for distributed software development.

Philip Lindsay, chief architect at Data Trace Information Services LLC in Anaheim, Calif., says he'd prefer to bring all software developers into the same room to review projects. But with about half of his 18-member development team in India, that's not an option.

"It's currently difficult to do software development in one location, and it's even harder to do it in two locations in two time zones," he says. "Add in a radically different time zone, culture, country, connectivity — just phone calls sometimes are laborious."

Lindsay uses a distributed software development tool called SourceCast from CollabNet Inc. in Brisbane, Calif. SourceCast is designed to work in a WAN and manage development work in a source code repository. If a file changes overnight, those changes are seen immediately. "Conflicts are found in real time, and that reduces the cost," he says.

Software tools can help, but managing offshore contractors often requires a personal touch. For example, Wipro has workers at Best Buy's U.S. headquarters. And Lindsay says Data Trace has an employee from India who is helping his team with cultural and language issues.

The same tools and techniques that work for managing offshore software developers can also work for offshore manufacturing, says Mark Goldberg, a vice president at Koret of California Inc., an Oakland-based clothing manufacturer and subsidiary of St. Louis-based Kellwood Co.

Koret does all its manufacturing offshore and doesn't want to maintain inventory. Goldberg uses Internet-based software developed by New Generation Computing Inc. in Hialeah, Fla., to keep track of the manufacturing operations. Everyone involved in the manufacturing process enters data into the system, so "there is no question about who owns what piece of information, who is responsible," he says.

Alan Brooks, who founded New Generation in 1982, says a big part of managing diverse work sites is understanding the thousands of details involved. Brooks has developed tools he uses to manage software development applying the same methods he uses to manage offshore manufacturing. His advice to IT managers developing software overseas: Approach it like manufacturing a physical product — consider every aspect of the life cycle.

"I think making software is manufacturing," he says. ♦

Global Toolbox

MANAGEMENT

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Don't start an IT project until the company has written a clear set of rules about the way it does business.

By Ronald G. Ross

RECENTLY, colleagues and I were talking to the chief software developer at a large client organization about progress on a major re-engineering effort there. Our concern was whether the project team members could meet a deadline some nine months out for delivering a large-scale prototype. We'd just spent several intensive months developing a comprehensive business model, and they still had several months of system design left to complete.

This developer is very sharp — not one to come up with any answers lightly. For the longest while, he said nothing, lost in thought. Finally, eyeing the detailed business diagrams plastered on the walls all around, he said, "If we had already started coding, I would say we had no chance at all. But since we haven't started coding yet, I'd say the chances are pretty good."

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he thought they had a pretty good chance of completing the code by the target date.

In large measure, the business rule approach is simply about asking the right questions of the right people. There is only one way to honestly meet a deadline, and that's to solve the business problem first.

Business-Driven IT

In the early days of building business systems, the business side could essentially sit back and let the technologists figure things out. The advantages of automating were so compelling that you could do virtually no wrong. Now, for all practical purposes, business and IT operate inseparably. When undertaking projects, the logical step then would be to put together seamless business/IT project teams and have them follow a business-oriented approach to developing requirements. Yet many companies are nowhere close to doing that today.

All too often, the business side still produces fuzzy, ill-focused "requirements," and the IT side continues doing "requirements" only a notch or two away from programming. How can this gap between business professionals and IT professionals in developing requirements be eliminated?

The answer is relatively straightforward. The business needs an organized approach that enables business professionals to drive the development of requirements. This approach must provide a road map that shows how to ask the right kinds of questions about the right things at the right times. What's needed is a business-driven approach.

The Rule Book

How many rules does your company have? A dozen? Ten thousand? Five easy to 10 to change any one of them? Many companies today are struggling to realize that they have problems with their rules. Rules need to be managed in a consistent or coherent manner.

Your company's rules of rules should be paper-based but rather automated in a database or repository, where the rules can be managed and readily accessed. That way, the health of rules can play a very active role not only during the system development project, but also once the new business system becomes operational. Software tools are available that enable business-side management of rules, opening unprecedented opportunities for the business.

—Ronald G. Ross

In traditional development approaches, much is usually lost in the translation of upfront requirements to the actual running system. But writing a set of clear business rules improves communications between the business side and IT, and provides a bridge between business analysis and system design. The business rule approach helps to close the requirements gap between the business side and the IT side.

So what's a business rule? From the business point of view, it's a directive

Business Rules Com

intended to influence or guide behavior. Business rules are literally the encoded knowledge of your business practices. From an IT point of view, a business rule is an atomic piece of reusable business logic.

In a way, everyone knows what business rules are — they're what guide your business in running its day-to-day operations. Without business rules, you'd always have to make decisions on the fly, choosing between alternatives on a case-by-case basis. Doing things that way would be very slow.

Rules are familiar to all of us in real life. We play games by rules, we live under a legal system based on a set of rules, and we set rules for our children. Yet the idea of rules in business systems is ironically foreign to most IT professionals. Say "rules" and many IT professionals think vaguely of expert systems or artificial intelligence. There's little recognition of how central rules actually are to the basic, day-to-day operations of the business.

Not coincidentally, many business-side workers and managers have become so well indoctrinated in procedural views for developing requirements that thinking in terms of rules might seem foreign or abstract. Virtually every methodology is guilty in this regard, whether for business process re-engineering, systems development or software design.

This is unfortunate for two reasons:

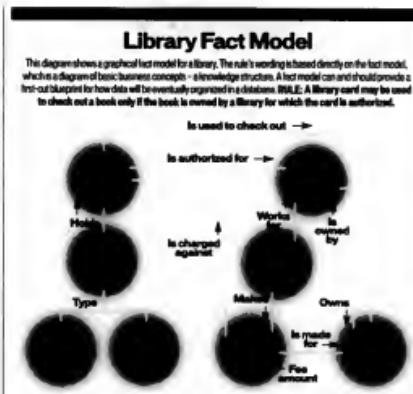
- Thinking about any organized activity in terms of rules is actually very natural. For example, imagine trying to explain a game like chess, checkers, baseball or football without explaining the rules.

- Business-side workers and managers have the knowledge it takes to create good rules.

Sample Rules

Take a look at the sample rules that follow, and notice how every aspect of operational control in a business system can be addressed by rules:

- Restriction:** A customer must not place more than three rush orders charged to its credit account.



- Holder:** A customer with preferred status should have its orders filled immediately.

- Customer:** A customer's annual order volume must be computed as total sales closed during the company's fiscal year.

- Manager:** A customer must be considered preferred if the customer places more than five orders over \$1,000.

- Type:** A customer must be archived if the customer doesn't place any orders for 36 consecutive months.

- Receives:** "Send advance notice" must be executed for an order when the order is shipped.

Rules build directly on terms and facts. Terms — like customer, shipment and invoice — should have a precise, unambiguous definition in the business. For example, customer might be defined as: "An organization or individual person that has placed at least one paid order during the previous two years."

Facts are given by simple, declarative sentences that connect the terms with a verb or verb phrase, such as, "Customer places order."

A "fact model" is a set of fact statements that describe the results of business operation (see diagram). A fact model should serve as an initial blueprint for a data model, but its primary purpose is to capture knowledge about the business in a structured form, distilled from the business-side workers and managers who possess it.



Rules essentially add the sense of the words *must* or *must not* to the terms and facts, as in, "Orders on credit over \$1,000 must not be accepted without a credit check."

Rules should be expressed in clear, unambiguous, well-structured business English, starting with an explicit subject. Rules should have no fluff and no missing facts. Rules can be qualified, as in "A shipment must be insured if the shipment value is greater than \$500." And rules can include timing criteria, as in "A student must be enrolled in at least two courses by the close of registration."

Rule Independence

A business is very much like a human body. The knowledge (term and fact) structure is like the skeleton; the processes are the powerful muscles; and the rules are the nervous system that controls the other two. All three are essential and interrelated. But business rules should be separate from the other two. A basic principle of this approach is that the rules are independent of processes and procedures. A fringe benefit of that "rule independence" is huge simplification in the processes.

The result is a "thin process," a long-standing goal of many IT professionals. By taking the rules out of the process, you can implement processes that are relatively simple and can be changed as the need arises.

In the National Football League, if a play isn't working for a team, it will be gone from its playbook within a couple of games. The plays are essentially throwaway. Similarly, businesses need to view their own procedures as throwaway — cheap enough to discard and replace readily when the procedures no longer work well.

Throwaway procedures are a must for the business to be adaptable and competitive. This deceptively simple idea — made possible by the business rules approach — can revolutionize the way work is done and systems are designed. ♦

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How many rules does your company have? A thousand? Ten thousand? How easy is it to change any one of those rules?

Many companies today are starting to realize that they have problems with rule management. Rules need to be managed in a consistent or coherent manner.

Your company's book of rules shouldn't be paper-based but rather automated in a database or repository, where the rules can be managed and readily accessed. That way, the book of rules can play a very active role not only during the system development project, but also once the new business system becomes operational. Software tools are now available that enable direct business-side management of rules, opening unprecedented opportunities for the business.

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This is unfortunate for two reasons:

1. Thinking about any organized activity in terms of rules is actually very natural. For example, imagine trying to explain a game like chess, checkers, baseball or football without explaining the rules.

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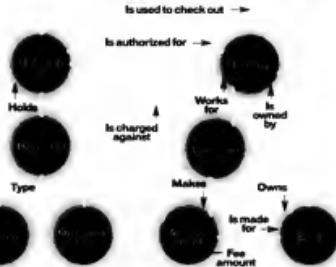
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Library Fact Model

This diagram shows a graphical fact model for library. The rule's wording based directly on the fact model, which is a diagram of basic business concepts — knowledge structure. A fact model can and should provide a fast cut keeping for how data will be eventually organized in database. **RULE: A library card may be used to check out a book only if the book is owned by a library for which the card is authorized.**



■ Heuristics: A customer with preferred status should have its orders filled immediately.

■ Computations: A customer's annual order volume must be computed as total sales closed during the company's fiscal year.

■ Inference: A customer must be considered preferred if the customer places more than five orders over \$1,000.

■ Timing: A customer must be archived if the customer doesn't place any orders for 36 consecutive months.

■ Triggers: "Send advance notice" must be executed for an order when the order is shipped.

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Rules About Business Rules

—Rules should be written and made explicit.

—Rules should be expressed in plain language.

—Rules should be independent, localized, yet workflow-aware.

—Rules should be modular, by domain, decomposing of system requirements.

—Rules should be persistent.

—Rules should be pluggable, supporting extensible knowledge management.

—Rules should be reusable.

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BRIEFS

'Virtual Close'
Piques Interest

Large companies that are looking to close their monthly financial books faster than the current paper-based 15 days are showing interest in the "virtual close," according to a report by Meta Group Inc. With a virtual close, all transactions and expenses are reported in real time instead of in batch mode.

Tracking inventory and expense in detail and motivating employees - for example, salespeople who need to provide monthly sales reports - to enter correct numbers into the system on time are more important. The goal, Meta said, is to be able to do a virtual close on a dime. To accomplish that, companies must streamline their systems and adopt the following practices:

■ Keep the code simple and robust on financial reporting.

■ Maximize the value gained from complex allocations and chargebacks.

■ Reduce both the number of books and the number of ERP applications they are entered on so the finance department has fewer systems to coordinate.

■ Use a common set of best practices throughout the company to improve coordination.

■ Improve business performance management using Web-based reporting/audit software.

**Eaton Hires IT
Vet as New CFO**

Industrial manufacturer Eaton Corp. has named Robert Sell as its new CFO. Sell has approximately 30 years of IT and operational experience and most recently was CEO at Morris Wallace Inc., a distributor of print and digital information. He has also worked as CEO at Brewsterock Corp. and Coors Brewing Co. Sell will lead the Cleveland-based company's worldwide IT operations and report to Richard Fournier, Eaton's chief financial and planning officer.

PAUL GLEN

Think Like an Archaeologist

If you'd like your IT projects and department to run more efficiently and effectively, you probably need to develop a keen appreciation for the work of archaeologists. That's right, real archaeologists. I'm not talking about the Indiana Jones variety of adventurous grave robbers, but of those men and women who spend their summers patiently digging in the dirt with trowels, dental picks and paintbrushes looking for sticks, stones and bones.

For us, what's important about their work isn't the excavation part, but what they do with the artifacts after they've removed them from the site. Archaeologists are students of the history of human technology. The fundamental premise of the field is that by carefully examining the artifacts of a past culture, we can understand the people who made those objects. We can learn not only about how the objects were made, but also about the ideas, values, culture and history of those who made them. We can understand to some degree how they lived and what they thought.

What archaeologists have recognized is that technology doesn't exist independently from people. In their eyes, a piece of technology is a durable form of human expression. When they look at a potsherd, they can often determine how the pot was made, including where the clay came from, what tempering was added to the clay and how it was fired. If the clay originated far from where the object was found, it indicates that the makers either traveled or traded. The techniques used to make the pot show how advanced the maker's knowledge of

pottery technology was. The shape and decorations often convey the use of the object. The choices made by the ancient artisans offer a glimpse into their minds and values.

This is no different from the technology coming out of any modern IT group. The technology that you create bears the marks of the team just as a stone ax shows the marks of an ancient flintknapper. The technology that you create is a reflection of the individuals who make it, the values of the makers and of the dynamics of the group.

In short, technology is the collective expression of the team that creates it. It doesn't exist as an entity separate from the team. They are reflections of each other. The team often organizes itself according to the demands of the technology, and the technology is produced through the dynamics of the team. In his book *The Dynamics of Software Development* Jim McCarthy refers to this phenomenon as "Team + Software."

For example, imagine that you're developing some sort of software system, and you get to the system integration phase and find that two chunks of

code don't integrate well with each other. In this situation, you can be pretty sure that the two groups that developed those different chunks of code don't communicate well. In fact, they probably don't like each other much, either. The dynamics of the human interaction have been expressed in the form of code.

I'm sure you've all seen a system in which the user interface made perfect sense to the programmers but was completely unintelligible to the users. Usually the interfaces on these systems reflect the underlying structure of the code rather than the business processes of the users. You can be assured that the cultural assumptions of that group include the idea that understanding technology is more important than understanding business improvement. The values of the group are clearly expressed in the design of the interface.

Have you ever worked on a system that was beautiful to behold, but was impossible to deploy and/or support? You can be pretty sure that the group that develops such a system holds programmers in higher esteem than deployment specialists, operations personnel or help desk technicians. The concerns of these groups were discounted or ignored during the design and construction. The social hierarchy of the group is right there, like a fingerprint on an Aztec water jug.

If you pay close attention to the dynamics of your group, you'll probably be able to predict what your technology will look like long before the money is spent developing and deploying it — and maybe your work will live on rather than being dug up by some future archaeologist. ■

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8:00am to 8:30am Registration and Networking Breakfast

8:30am to 9:00am *Turning Information Into Insight: The Changing Role of Business Intelligence in the Enterprise*

Marylyn Johnson, Editor-in-Chief, Computerworld

9:00am to 9:45am *The User Experience: An In-Depth Case Study*

Thrivin Balaji, Times of Technology, One CIO's Perspective

Refreshment and Networking Break

10:45am to 11:45am *High-Impact Strategies for Delivering Business Intelligence Results*

Peter DeSantis moderated by Julie King, National Correspondent, Computerworld

11:45am to 12:15pm *Evening the Score: Competitive Leveraging Information for Competitive Gain*

John DeLoach, SVP, SAS Institute

Networking Lunch

12:15pm to 12:45pm *Building Innovation Into a Business Intelligence Infrastructure*

Shaukat Ali, author of Business Intelligence Roadmap and President, Arie Group

12:45pm to 1:15pm *Turning a Lapdog into an IT Executive: One CIO's Success Story*

Mark D. Johnson, President, Chairman and CEO, iGuru

1:30pm to 2:00pm *Regulated IT: Uncle Sam Wants Your Data*

Peter DeSantis moderated by Tom Hoffmann, Computerworld Reporter

3:00pm Program concludes

San Francisco • September 25, 2003

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Selected speakers include:



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Computerworld



Shaukat Ali
Author
Business Intelligence
Roadmap



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New Work World

ON THIS LABOR DAY 2003, what's the state of IT work? According to the numbers, it's not quite as bad as it could be — but it's still pretty grim. A report out last week from Robert Half Technology says that only 4% of CIOs plan to cut IT staff by the end of the year (see story, QuickLink 40966). Then again, only 9% plan on adding IT staff. That's not exactly a roaring IT job market.

But dig a little deeper, and you'll find that the big story isn't in the statistics. It's in what companies want from IT people going forward: real business experience to go along with technology expertise.

That's what CIOs are telling U.S. colleges and universities they need from computer science graduates, according to a recent Computerworld survey [QuickLink 40587]. Those CIOs say they don't want to hire fresh-faced geniuses who have mastered the latest tech but are clueless about real-world business needs.

And CIOs are putting in more time and effort than ever before to help shape computer science curricula, so they'll have a better chance of getting future IT employees with the business and communications skills they need.

That's the state of IT work today: Purely technical work is out, and being a pure technologist won't cut it in corporate IT shops anymore. From here on in, the relentless focus for IT work is on the business.

But that shouldn't be a surprise. We've been talking about the importance of aligning IT with business needs for a long time. We've been offloading pure technology jobs for even longer — that's why Microsoft, SAP and Oracle build our software, just as IBM, Sun, Dell and Cisco build our hardware. And increasingly, the rest of our pure technology work will be done by outsourcing.

So what work is left for IT people to do? Plenty.

Right now, users struggle with our systems. They struggle because we can't keep up with them. Business conditions change. Business opportunities appear and vanish. Our users react in real time — changing the way they do business to meet those constantly shifting situations.

But our systems don't change to match those changes in our business processes. Forget about real time — we're lucky if we're just

months behind in tracing those changes. Sometimes, we're years behind.

Result: Users have to work around those gaps where systems don't match processes. And those work-arounds cost time and money — and sometimes lost business.

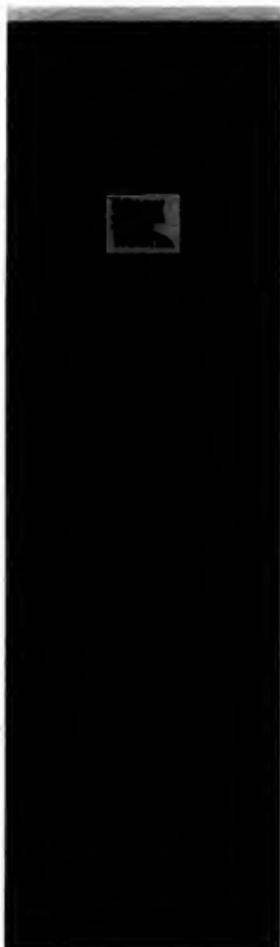
And often enough that we don't even know there's a problem. Far too many IT people figure their job is done if a system meets the specification or the service-level agreement — never mind whether it matches the real business process. And too many IT people don't have enough contact with users to find out what the real business processes look like anyway.

How do we solve those problems and close those gaps? We need to understand our businesses better. We need to communicate with users. And ironically, we need more and better technology skills — that's the only way we can assemble systems that are flexible enough so we can continuously retrofit them to match constantly changing business processes.

Yes, that's right: The only way IT people can stay relentlessly focused on the business is by being even better when it comes to technology.

Making all this happen won't be simple. For lots of us, it won't be comfortable. And even if we get it right, it will never be orderly or tidy. Business doesn't work that way. We'll be carving order out of continuous change. We'll be wrestling technology into place one day to support business processes that may change the next.

But that really is what's needed. So forget the statistics, and start bearing down on that business problem. Because when it comes to the state of IT work, we've got our work cut out for us. ■



Conclusions from the current study

The results of the present study indicate that the use of a low dose of ibuprofen (10 mg/kg) did not significantly reduce the incidence of postoperative nausea and vomiting in children undergoing tonsillectomy.

It is interesting to note that the incidence of PONV was higher in the control group than in the ibuprofen group. This may be due to the fact that the control group received a higher dose of morphine (0.1 mg/kg) compared to the ibuprofen group (0.05 mg/kg).

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